Message from the Committee Chair

It is with great pride that I present the 2012 American Society of Civil Engineers Infrastructure Report Card. For the past years the Metro Los Angeles Branch has been developing the 2012 Report Card for Los Angles County's Infrastructure. The ASCE Report Card represents one of the most visible and usable contributions our organization offers to the general public and elected policy makers at all levels of governance. This year’s effort is no different than the past and comes with a renewed sense of urgency given the dire economic conditions that face our region and the continued need for maintenance and upgrading of the critical infrastructure our community relies upon to live and work on a daily basis.

Over 50 individuals representing public and private sectors have spent countless hours carefully reviewing and assessing the condition of ten different infrastructure categories, including bridges, dams, flood control, drinking water, ports, solid waste, streets & highways, transit, urban run-off and wastewater systems. Grades for these ten categories range from B+ to D- with a cumulative average grade of C. Estimates of annual investments needed to maintain and appropriately expand our infrastructure are in the tens of billions of dollars.

Best Wishes,

Andy Duong, P.E.
2012 Infrastructure Report Card Chair
ASCE Metropolitan Los Angeles Branch Past-President
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What is Infrastructure?

infrastructure [in-fruh-struhk-cher] – noun: the fundamental facilities and systems serving a country, city, or area, as transportation and communication systems, power plants, and schools.

Infrastructure refers to the fundamental systems that support our community civilization. It encompasses all the basic, underlying facilities we rely on to conduct our daily business, raise our families and pursue our dreams. It includes the roadway network that allows you to drive to work and the grocery store, the underground pipes that bring fresh water to your kitchen and take waste water away from your bathroom. It includes the hydroelectric dam that generates electricity, reservoirs and pumps that provide drinkable water, and sewage treatment plants that treat wastewater.

Our economy depends on infrastructure to provide power for factories to transport goods and services, and via telecomm cables to transmit information to banks and customers. Our health depends on having clean, potable water to drink and underground pipes to take human and industrial waste away to be treated and safely disposed. Lastly, our safety depends on infrastructure to withstand storms and natural events, keeping our homes safe from flooding and other damage.

Why Should You Be Interested in Infrastructure?

All of these infrastructure systems need to be built, maintained and upgraded on a continuous basis for our community to thrive. Infrastructure system failures can cause disruptions to our daily lives, trigger slow-downs in economic activity, or even be the cause of injury and death. For example, a bridge failure on a major highway could cause widespread traffic jams, disrupt access to hospitals, and result in fatal injury during its collapse.

We need to take care of our cities, by maintaining our roads, upgrading storm water and sewer systems to meet growing populations, and having regularly evaluated and maintained systems. These investments result in long term savings and positive growth, benefiting our present community for generations to come.
What is This Report Card?

This report card is an assessment of the existing condition of infrastructure in Los Angeles County.

Infrastructure is designed and maintained by engineers. Our community relies on these systems to function and to make our daily lives better.

This report card gauges Los Angeles’ infrastructure status as of 2012. It compiles the work of over 50 individuals representing public and private sectors who have spent countless hours carefully reviewing and assessing the condition of ten different infrastructure categories. This assessment included review of reports on existing physical conditions, as well as review of public agency plans and attendance to meetings and workgroups. The result of this team effort is presented in this document for each infrastructure category.

ASCE’s Mission: Provide essential value to our members and partners, advance civil engineering, and serve the public good.

In addition to a written evaluation, a letter grade has been determined for each category. Grades for these ten categories range from B+ to D- with a cumulative average grade of C. A complete discussion of each infrastructure category and its grade is found in the body of this report.

Why Didn’t Los Angeles Earn Any A’s?

While we can all agree that these systems are critical to our city, we do not agree on the cost to invest in them. These systems serve millions of people. They are large and they are complex. Maintaining our roadways in peak condition, upgrading our bridges, and replacing an aging sewer system will cost a lot of money. Infrastructure costs are usually paid for by tax revenues and fees. These revenue sources do not keep pace with the upgrading and maintenance expenses these systems require. To compound matters, the recession of 2008-2009 drained many public coffers and caused substantial reductions in tax revenues. In short, our infrastructure was already in great need of attention and the recent economic crisis escalated the problem.

Due to the economic challenges and the high cost of maintaining infrastructure, Los Angeles County received grades ranging from B+ to D-. The cumulative average grade for all categories was C.

This report card highlights the current state of infrastructure in Los Angeles County and encourages continued efforts to address the needs of these critical systems.
to these factors, it is impossible for infrastructure to be at high level. As a result, these systems receive an average grade of “C” showing an increase in investment is required.

How Much Does it Cost?

Estimates of annual investments needed to maintain and appropriately expand our infrastructure are in the tens of billions of dollars. There are many sources of investments. User fees, issuance of public bond measures, property and development taxes are not common. These decisions must be made by politicians and policy makers with public support. Infrastructure issues impacts all of us, regardless of political affiliation, level of education or socio-economic status. This Report Card can be utilized by politicians and policy makers to make informed choices and used by the public to advocate for investment in the critical infrastructure that keeps our county thriving.

How Can You Help?

Call your local city council or county commissioners. Ask for continuous and timely maintenance of these systems. Join a local planning commissions or boards. Inform your friends, family and neighbors. Help them understand the far-reaching implications of infrastructure. As you learn more about these facilities, think long-term. These systems are large in scale and require long-term solutions.

There are also things you can do in your daily life. Reduce your water usage to ease demands on our water systems. Take mass transit to reduce your impact on transportation systems. Make an effort to recycle and reduce the demands on our solid waste systems.
There are 3,552 bridges in Los Angeles County. Each bridge is inspected every few years. In accordance with National Bridge Inspection Standards, each bridge received an evaluation and a letter grade; 1,581 received a grade of C or lower, indicating over 44% of study area bridges are structurally deficient or functionally obsolete. Bringing all Los Angeles County bridges out of these substandard conditions, by upgrades or replacements, is estimated to cost $11.9 billion. Recommendations include support of increased funding for the Federal Highway Bridge Program and continued funding for the Bridge Preventative Maintenance Program.

Dams: B-

Los Angeles County has 95 dams, which were evaluated with respect to facility condition, capacity to meet demands and facility age versus useful life. All dams were given a letter grade with respect to these factors and an overall grade of B- was assigned. Many of these dams are over 50 years old and nearing the end of their useful lives, and many require substantial maintenance, rehabilitation or major upgrades in the coming years. Costs for this work are estimated to exceed $200 million. Recommendations include supporting additional State and Federal funding for required seismic rehabilitation and upgrades to major dams in Los Angeles County to restore or increase their flood control and water conservation capabilities and funding to keep the County’s dams in good operating condition.

Drinking Water: C

Many separate water systems, from relatively small to very large, serve the 10 million residents within Los Angeles County. These various systems were evaluated and then graded with respect to three major factors: condition (C-), capacity (B) and operations (B-). While capacity and operations both received B grades, the condition of the systems received a C-, primarily due to the age of many of these systems and their need for replacement in the

Bridges: C

Dams: B-

Drinking Water: C
of deteriorated systems, identification and implementation of measures to improve water system reliability, implementation of additional water conservation measures, increased use of recycled water, and increases in public and private investment in water supply and distribution systems.

**Flood Control: B+**

The Los Angeles County Flood Control District (LACFCD) and the cities within Los Angeles County have constructed a comprehensive and effective flood control system to protect citizens and property from flood damage. Since age is the primary factor determining condition and effectiveness of flood control systems, the age of the systems provided the baseline for grading, with newer systems getting a higher grade. The overall grade was determined to be a B+. It was estimated that an annual investment of $48 million is needed to keep Los Angeles County’s flood control systems operating in good condition. Recommendations included support for funding to keep these systems in good condition and to expand the view of flood control to include improving water quality and reducing pollution.

**Ports: B**

The Port of Long Beach and Port of Los Angeles represent the fifth busiest shipping terminal complex in the world. An infrastructure assessment of the entire Harbor District consisted of evaluating eight different components of the Ports’ infrastructure, including wharves, railroads, roadways, utilities, channels and berths, container terminals, other marine terminals, and gantry cranes. The overall grade for the San Pedro Bay Ports based on an equal input of each of the eight components is B. The Ports are looking to continue major improvements with a projected total investment of $3.5 billion over the next five years.

**Solid Waste: B+**

In 2011, the County disposed of an average of 28,000 tons of solid waste per day and in 2009, jurisdictions countywide collectively achieved a recycling/reuse diversion rate of 55%. The economy, recycling and conversion technologies have resulted in steady declines in solid waste disposal since
2006. However, challenges do remain. Diminishing in-County landfill capacities, increasing disposal demands over the long term due to economic and population growth, and public opposition towards establishing new facilities. The overall grade for Solid Waste Management is B+. It is estimated that over $450 million per year for the next five years is needed to operate and maintain the solid waste management infrastructure.

**Streets & Highways: C-**

The assessment of Los Angeles County streets and highways consisted of evaluations of pavement condition and traffic congestion. Pavement condition was evaluated on pavement segment ratings for 2.65 billion square feet of street and highway pavement, and a final grade of C+ was derived. Traffic congestion was scored according to freeway and arterial level-of-service, a measure of actual traffic volume with respect to roadway capacity, and a final grade of D was derived. The final grade is based on a 50%-50% split, resulting in a grade of C-. Over $3 billion of investments are needed in the next five years to address just pavement condition alone, and billions more to relieve traffic congestion and address constantly increasing traffic demands.

**Transit: C**

Over 536 million fixed route transit trips are taken each year with 72% of the trips provided by Metro, 26% of the trips are provided by municipal operators, and 2% of the trips are local provided by the local cities’ fixed route services. While transit services have made improvements of the past few years, and both facilities and operations received high marks, funding for continued service is facing the effects of the economic crisis that will likely result in service cuts, fare increases, and erosion of current levels of service. Thus the transit final grade is a C. The Metro 2009 Long Range Plan estimates that over $18 billion is required to fund regional Metro and Municipal Transit improvement priorities annually, and recommendations include support for expanding transit funding at all levels of governance.

**Urban Runoff: D**

Most water pollution comes from the untreated water that flows off rooftops, pavement, streets and parking lots directly into our waterways,
bays and beaches. Runoff contains numerous pollutants, including industrial solvents, paints, infectious bacteria, oxygen-choking pesticides and fertilizers, motor oil, trash and even toxic heavy metals such as lead, mercury, chromium and arsenic. Four pollutants are used as indicators for water quality: nutrients, bacteria, metals, and trash. The criteria for assessing water quality is based on: 1) results of water quality improvements relative to water quality standards, and 2) implementation of water quality improvement efforts. The composite Los Angeles County Watershed Grade is D. There is debate on the exact amount needed to achieve water quality compliance; estimates range widely from $3 billion to $300 billion.

**Wastewater: B+**

The existing Wastewater Collection and Treatment System is comprised of three main components: the gravity flow collection system (primary and secondary sewers), sewage pump stations, and wastewater treatment plants (both large and small). The sewer collection system has a combined overall condition rating of B. The pump stations have a combined overall condition rating of B. The combined condition rating for wastewater treatment plants is a B+. Thus the overall grade for the wastewater system is a B. The estimated five-year operation and maintenance budget for the wastewater system is $1.9 billion. Necessary capital improvement costs over the next five years are estimated to be $2.8 billion.

**Recommendations**

To maintain and improve LA County’s Wastewater Treatment Infrastructure, we recommend the public:

- Support funding for an accelerated capital improvement program to protect public health and safety
- Support funding for closed circuit television inspection of the collection system to determine the structural integrity

**Sources**

- The Consolidated Sewer Maintenance District’s Maintenance Management System and other databases utilized by the County of Los Angeles Department of Public Works
- City of Los Angeles Infrastructure Assessment Reports
- County Sanitation Districts of Los Angeles County Sewerage and Office Engineering Departments
- Survey Information obtained from the Cities of Bell, Cerritos, El Monte, El Segundo, Gardena, Hermosa Beach, Inglewood, Lancaster, Los Angeles, Monrovia, Palmdale, Pasadena, Pomona, Redondo Beach, San Marino, South Gate, South Pasadena, Vernon, West Hollywood, and Whittier
WASTEWATER

Treatment Plants

Wastewater collected throughout the County is treated at one of 20 treatment plants. The treatment plants were rated using an A through D grading system. Treatment plants that had sufficient capacity to meet current and future wet weather flows, required only routine maintenance, and were in full permit compliance received an A grade. Plants that had capacity for only dry weather flows, required extensive maintenance and improvements, and could not consistently meet all permit requirements received a D.

The combined condition rating for the wastewater treatment plants is a B+. The overall weighted average score is 3.58 on a scale of 1 to 4. This overall rating was calculated using the daily average flow of each treatment plant as the basis of the weighted average formula. However, ever changing regulatory requirements, such as greenhouse gas emissions, will require modifications to the existing wastewater treatment plants, even those receiving a high grade of B or better.

Final Grade

Applying an equal weight to each of these conditions, the overall grade for the wastewater system is a B+ with an overall rating of 3.45, which compares quite favorably to the national average grade of D- recently given by ASCE in its Report Card for America’s Infrastructure.

Investment Needs

The estimated five-year operation and maintenance budget for the wastewater system is $1.9 billion. In addition to this, all condition C and D components should be upgraded, rehabilitated, or replaced. The necessary capital improvement costs, which include added security measures, to accomplish this goal over the next five years are estimated to be $2.8 billion.
Other items required for Highway Bridge Program (HBP) funding eligibility by FHWA are the Structurally Deficient (SD) and Functionally Obsolete (FO) designations. A bridge is rated SD when a major structural component of the bridge (i.e. deck, superstructure, or substructure) is in poor or worse condition. An FO rating is usually a result of an older bridge design which no longer meets current standards. These bridges are not necessarily unsafe, but may not accommodate current traffic volumes or meet current geometric design and weight standards. The SD and FO designations were used to help estimate the type and cost of improvements needed.

**Final Grade**

Based on the condition data available, our bridges rate a C.

**Investment Needs**

After the collapse of the I-35W Bridge over the Mississippi River in Minnesota on August 1, 2007, there has been an increased interest by elected officials at the Federal, State, and local levels to better understand the current condition and replacement/repair costs of bridges throughout the United States. The safety of in-service bridges is ensured through ongoing inspection and maintenance efforts, however, there remains an overwhelming need for funding to replace or rehabilitate bridges that are nearing the end of their service life.

Federal funding has been provided for bridge maintenance through the Bridge Prevention Maintenance Program (BPMP). The goals of the BPMP include correctioning minor structural deficiencies early in the bridge life cycle to prevent the need for more costly improvements later, extending the service life of existing bridges, and making efficient use of limited resources.

The sewer collection system in the County has a combined overall condition rating of B+. The overall weighted average score for the collection system is 3.45 on a scale of 1 to 4. This overall rating was calculated using the linear footage of the collection system as the basis of the weighted average formula. However, 13.4 percent of the collection system, which represents 2,020 miles of sewers, has reached a point where repairs and rehabilitation are needed to keep the system functioning properly. In comparison with the previous report, there has been a decrease in the miles of deficient sewers primarily due to the number of cities which responded to the solicitation for information. In 2010, 22 cities representing 6,015 miles of sewers provided relevant information, as compared to the 18 cities representing only 2,622 miles of sewers which responded for this report.

**Pump Stations**

There are 308 pump stations within the wastewater collection system. The pump stations were rated using an A through F grading scale. Pump stations in excellent condition, with sufficient capacity for future wet-weather flows received an A grade. Pump Stations in a very deteriorated condition, not meeting design standards, and lacking capacity for dry weather flows received an F grade.

The pump stations in the County have a combined overall condition rating of B. The overall weighted average score for the pump stations is 3.00 on a scale of 1 to 4. This overall rating was calculated using the number of pump station units as the basis of the weighted average formula. However, 28.5 percent of the pump stations require significant improvements to restore capacity or upgrade deteriorated conditions to keep the stations functioning properly. Over the next five years all D or less rated pump stations should be rehabilitated. In comparison with the 2005 Report Card, there has been a decrease in the number of deficient pump stations. This difference can be attributed to the re-evaluation of previous assessment criteria which provided a more realistic evaluation of the health and sustainability of these facilities.
The Los Angeles County wastewater collection and treatment system consists of numerous separate systems ranging in size from very small to very large. The City of Los Angeles operates and maintains 6,531 miles of primary and secondary sewers, 52 pump stations, and 4 major wastewater treatment plants. The Los Angeles County Department of Public Works, on behalf of the County Consolidated Sewer Maintenance District, operates and maintains 4,600 miles of secondary sewers, 153 pump stations, and 4 wastewater treatment plants. The County Sanitation Districts of Los Angeles County operates and maintains 1,320 miles of primary and secondary sewers, 51 pump stations, and 12 major wastewater treatment plants. Included in this year’s survey is assessment information from 18 smaller municipal systems encompassing 2,622 miles of primary and secondary sewers and 52 pump stations.

**Assessment of Current Wastewater Collection and Treatment System**

The existing Wastewater Collection and Treatment System is comprised of three main components: the gravity flow collection system, sewage pump stations, and wastewater treatment plants.

**Collection System**

The collection system consists of 1,679 miles of primary sewers (16 inches in diameter and larger) and 13,394 miles of secondary sewers (less than 16 inches in diameter). The collection system was rated using an A through F grading system. Sewers in excellent condition, with no cracks, tight-fitting joints, and sufficient capacity to accommodate future growth and wet weather flows were rated an A. Sewers that had collapsed conditions and were in need of immediate repair were rated F.

The work needed to improve the condition of the bridges with lower SR’s includes upgrading older safety rail, adding lanes to bridges (widening) and replacing major parts or entire bridges. The estimated investment costs were based on recent cost analysis for bridge work performed by the County of Los Angeles. The total infrastructure investment needed for all bridges within Los Angeles County is estimated to be $11.9 billion.
There are 95 facilities in Los Angeles County classified as dams by the California Department of Water Resources, Division of Safety of Dams (DSOD). These facilities are maintained and operated by various owners and are located throughout the County. Many serve a vital role as part of the county’s flood control system, holding back storm runoff and capturing sediment washed from the hillsides. Other facilities provide water conservation or storage to meet water supply needs. The facilities consist of concrete and earth embankment dams in natural canyons and debris basins in natural streams, as well as reinforced concrete tanks. DSOD is the jurisdictional state agency responsible for dam safety for 89 of these facilities, while 6 are owned and operated under the jurisdiction of the United States Army Corps of Engineers (USACE).

Assessment of Existing Dams

A committee comprised of dam engineers from DSOD, Los Angeles County Department of Public Works, Metropolitan Water District of Southern California and the USACE rated the dams in Los Angeles County based on three factors: 1) Facility Condition which includes physical condition of the dam, amount of deferred maintenance, frequency of dam inspections, condition of monitoring instrumentation, and identification of any unsafe conditions at the dam; 2) Facility Age Versus Useful Life which rates the facility based on its age, whether or not it has received significant rehabilitation, and if it meets relevant standards for its current use; and 3) Capacity to Meet Current and Projected Demands which addresses whether or not the facility meets its original purpose and function and if it can withstand anticipated physical demands such as forces from floods and earthquakes.
Facility condition and capacity to meet current and projected demands are considered the most important factors related to the safety of a dam. These factors were weighted equally, while the Facility Age Versus Useful Life Factor was given half the weight in determining an overall rating.

Final Grade
The overall grade for the 95 dams in Los Angeles County is B-. This grade is considered to reflect the current condition of dams in Los Angeles County, however, the detailed inspections and analysis that determined the score were performed in 2010. There is continued decline in the condition of many dams even though investments have been made in dam maintenance and rehabilitations since 2005.

Investment Needs
Many of the dams in Los Angeles County are over 50 years old and their auxiliary components, such as inlet/outlet works' mechanical and electrical components, are nearing the end of their useful lives. This is illustrated by a grade of C for Facility Age Versus Useful Life. In order to keep the existing dams in safe operating condition, annual investment is needed. The annual operation and maintenance cost for dams in Los Angeles County is in excess of $50 million. Additionally, the cost of necessary sediment removal from reservoirs, seismic rehabilitation and major upgrades to dams in Los Angeles County is over $20 million for the next five years. Without these investments, the structural and functional condition of these facilities will deteriorate, and flood protections and water conservation for the general public may be jeopardized.

Recommendations
• Support continued funding to keep the County's dams in good operating condition
• Support additional state and federal funding thru grants or other programs for required seismic rehabilitation and upgrades to major dams in Los Angeles County

Sources
• County of Los Angeles Department of Public Works
• Devinny, Joseph, Sheldon Kamieniecki, and Michael Stenstrom. (Devinny et. al.) 2004. Alternative Approaches to Stormwater Quality Control. Prepared for the Los Angeles Regional Water Quality Control Board. USC Center for Sustainable Cities
• California State University, Sacramento (CSUS). 2005. NPDES Storm water Cost Survey. Prepared for California State Water Resources
Sources

- Army Corps of Engineers, Los Angeles District
- California Department of Water Resources, Division of Safety of Dams
- County of Los Angeles Department of Public Works
- Metropolitan Water District of Southern California
- City of Los Angeles, Bureau of Engineering

C=2, D=1, D=0 was adopted for numerical weighting and development of a Watershed Grade Point Average.

Final Grade

The composite Los Angeles County Watershed Grade is D for the region.

Investment Needs

There is significant debate on what implementation costs and investments are required to meet water quality objectives. The latest estimate puts the compliance cost at between $4 billion and $30 billion over the next 5 years. However, the actual cost to comply depends on the scope and extent of the actions municipalities will be required to take to meet the water quality objectives.

Trends

Although the overall grade remained unchanged from the previous version of the Infrastructure Report Card, it must be recognized that there are a number of positive trends. The public recognizes the importance and value of clean creeks and beaches. The overwhelming passage of the City of Los Angeles’ Measure O ($500 million general obligation bond) in 2004 and in the City of Santa Monica, passage of a special clean beaches and ocean fee in November 2006, indicates a willingness to make investments that will improve the quality of the living environment. Agencies within the Santa Monica Bay completed and began implementing wet and dry-weather Bacterial TMDL Implementation Plans, which are integrated, iterative, and adaptive in nature. Other jurisdictions are working together on other implementation plans to address specific TMDLs. Also, the Los Angeles County Flood Control District is spearheading an initiative in cooperation with cities and many stakeholders to initiate a local funding source through imposing a parcel fee that would provide a sustained funding to implement local and regional projects that improve water quality.

Many cities, as well as the unincorporated County, are implementing projects that would prevent trash from entering the water ways. They are also building projects that divert runoff to sanitation treatment plants and keep from
Assessment of Urban Run-off

The methodology involves a watershed-by-watershed assessment with a region-wide grade being the composite of all watershed evaluations.

Four pollutants are used as indicators for water quality, each of which is weighted equally. These indicator pollutants are nutrients, bacteria, metals, and trash.

The criteria for assessing each watershed are based on: 1) Results of water quality improvements relative to water quality standards, and 2) Implementation of water quality improvement efforts. For 2012, an A or B would only be awarded if implementation efforts are successful enough to reflect significant improvement in water quality, leading to compliance with WQS and TMDLs. A grade of C or D indicates efforts are underway, and there is some water quality improvement, but final objectives have not been met. An F indicates not only poor water quality, but also failure to initiate significant water quality improvement efforts.

It is important to note that there are areas with no TMDLs for pollutants and, thus, no action is being taken which means that poor grades result. Generally, municipalities do not take action until a TMDL is established since the TMDL describes the final guidelines that direct how to begin the clean up for the pollutant.

The following summarizes the general guidelines used for each watershed evaluation. For purposes of this report card, dry-weather (typically non-rainy season runoff) and wet-weather (rainy season runoff) conditions were combined.

For each watershed and parameter, grades were established and weighted (equally) for a composite total. An academic scale of A=4, B=3

Drinking Water

The drinking water system in Los Angeles County serves 10 million residents and numerous municipal systems, water districts, and private water companies. Two-thirds of the County’s water is imported from the Colorado River and Northern California. Ensuring a safe, reliable water supply for all residents is of the utmost importance to maintain our current lifestyle and protect public health.

Assessment of Existing Systems

The County’s drinking water system was assessed based on an evaluation of three major factors: 1) condition, 2) capacity, and 3) operations.

The condition of the drinking water facilities is rated C-. An assessment of the condition of over 11,000 miles of water mains indicates that many of the County's pipelines have reached the end of their useful life and require replacement. As these pipelines continue to age, leaks develop more frequently and the reliability of the water service to the County's residents is adversely affected. Smaller water agencies with limited resources are impacted most severely; however, the challenge is evident countywide.

The capacity of the County’s water system is rated B. The capacity factor includes an evaluation of the sufficiency of water supplies, reliability of water supplies, and the capacity of water system facilities. Among the challenges is providing a reliable supply of water to the County’s residents during times of drought or following a natural disaster such as an earthquake. Recent concerns with the ecological health of the Sacramento-San Joaquin Bay Delta, from which a majority of the County’s water supply is received, will continue to require water agencies to seek alternative sources for the water supply.

The operations of the County’s water system is rated B-. The operations factor consists of an assessment of water quality, water-use efficiency, and utilization of recycled water. Many new water-use efficiency programs
and policies have been implemented throughout the County, supporting a change in attitude towards the value of water. However, additional conservation measures are needed to improve the reliability of the County’s water supply. Also, a substantial increase in the amount of recycled water used in the County is necessary to offset potable water demands.

Final Grade
Overall, the County’s drinking water system is rated C after weighting factors for the system condition, capacity, and operations.

Investment Needs
Systematic and timely investments in the range of $3.7 billion within the next five years are needed for constructing water projects including appropriating funding for rehabilitation and replacement of the aging infrastructure. Water agencies in Los Angeles County have the ultimate responsibility for keeping the drinking water reliable and safe adhering to regulatory health standards and making necessary improvements.

Recommendations
- Replace or rehabilitate deteriorated water system facilities before service interruptions begin to affect the reliability of the system
- Identify and implement measures to improve the sufficiency and reliability of the water systems, particularly to prepare for drought and/or natural disaster
- Implement additional water conservation measures and support a positive attitude towards the value of water
- Increase the amount of recycled water used to offset potable water demands
- Support public and private investment to maintain a safe, reliable water supply and distribution system

Urban Run-off
Rivers, lakes, creeks, streams, beaches and coastal waters in the Los Angeles area have been found to be contaminated with toxins and health-threatening pollutants. Contamination is a threat to humans and wildlife. Most water pollution comes from the untreated water that flows off rooftops, pavement, streets and parking lots directly into our waterways, bays and beaches. Runoff contains numerous pollutants, including industrial solvents, paints, infectious bacteria, oxygen-choking pesticides and fertilizers, motor oil, trash and even toxic heavy metals such as lead, mercury, chromium and arsenic.

Background
Water Quality Standards (WQS) are the foundation of the water quality-based pollution control program mandated by the national Clean Water Act. Water Quality Standards define the goals for a waterbody by designating its uses, setting criteria to protect those uses, and establishing provisions to protect waterbodies from pollutants.

The Clean Water Act requires states, territories, and authorized tribes to develop lists of waters that are too polluted or otherwise degraded to meet the water quality standards.

The law requires that each jurisdiction establish “priority rankings” for the listed waters and include Total Maximum Daily Loads (TMDLs). TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards.
**Recommendations**

- Funding transit projects and programs identified in the Los Angeles County MTA's Long-Range Transportation Plan and increase funding for new systems and expansions, buses and bus facilities, transit capital and preventative maintenance, and paratransit capital needs for services provided by regional, municipal, county and Local governmental agencies
- Funding transit programs and continue the expansion of Rapid Bus Routes
- Continuing to incorporate Rapid Bus amenities, Limited Stop Operations and enhanced Transit Stations throughout the County
- Continuing to develop and fund programs to increase Los Angeles’ awareness of immediate transit needs and long-term benefits including improved air quality, greater access and the greater economy of transit use
- Continuing to develop consistent and reliable sources of funding for public transportation in California and in Los Angeles County
- Protecting existing state and federal transportation funding sources

**Sources**

- Assessment data survey provided by City of Inglewood, City of El Monte, City of Burbank, Palmdale Water District, City of La Verne, City of Lynwood, City of Manhattan Beach, City of Whittier, Los Angeles Department of Water & Power, Central Basin Municipal Water District, Orchard Dale Water District, City of Glendora, Newhall County Water District, Castaic Lake Water Agency, Los Angeles County Waterworks District, City of Industry, Las Virgenes Municipal Water District, City of South Pasadena, City of Covina and Kinneola Irrigation District

- Updated Metro Long Range Transportation Plan for Los Angeles County
- Access Services Paratransit Annual Statistics 2009
- Metro Los Angeles County NTD Reporting 2008 and 2009
- Recent Los Angeles County Infrastructure Surveys
- Recent City of Los Angeles Transportation Profile
- SCRRRA (Metrolink) FY 2011 NTD Report
The Los Angeles County Flood Control District (LACFCD) and the cities within Los Angeles County have constructed a comprehensive and effective flood control system to protect citizens and property from flood damage. The system includes dams, open channels, debris basins, underground storm drains, and water conservation facilities. The Los Angeles County Flood Control District (LACFCD) and the cities within Los Angeles County have constructed a comprehensive and effective flood control system to protect citizens and property from flood damage. Since age is the primary factor determining conditions and effectiveness of flood control systems, the age of the systems provided the baseline for grading, with newer systems getting a higher grade. The overall grade was determined to be a B+. This Report Card update provides a condition assessment for the County’s channels and storm drain systems using data from the LACFCD only.

**Assessment of Existing Flood Control Facilities**

Age is the primary factor affecting the condition of flood control facilities. LACFCD Maintenance Databases were used to obtain the ages of channels and storm drains. A scoring system was applied to the 3,454 miles of channels and storm drains. An A was given to facilities built in the last 20 years, a B if built 20 to 50 years ago, a C if built 50 to 80 years ago, a D if built 80 to 100 years ago, and an F for facilities built over 100 years ago. The average grade given is a B.

The federal government designates flood hazard areas as Flood Zone A and requires property owners to carry mandatory flood insurance. Throughout the County, Flood Zone A areas make up about 5 percent (205 square miles). The federal government and local jurisdictions are also conducting additional flood hazard studies which may affect the flood zones in the coming years.

With such a small area subject to mandatory flood insurance and minimal drainage complaints, the effectiveness of the flood control system is rated A.

**Final Grade**

The final grade for the transit system in Los Angeles County is C.

**Investment Needs**

Overall, Transit services have improved over the past seven years. However, there is a fiscal transportation funding crisis that is expected to continue, which will result in service cuts, fare increases, and erosion of current levels of service.

Transit infrastructure for Los Angeles County is underfunded. The Metro 2009 Long Range Plan estimates that over $18 billion is required to fund regional Metro and Municipal Transit improvement priorities annually. Investment needs reported from the Infrastructure Survey indicates a minimum investment need of $600 million for transit capital, transit technology and operating expenses over the next few years.
Los Angeles County is a highly urbanized county consisting of over 4,000 square miles with 88 local cities and large unincorporated areas, and a population of over 10 million. Public transportation includes rail services, buses, and paratransit. Metro link rail provides service on 7 routes with 55 stations in the counties of Los Angeles, Orange Riverside, San Bernardino, Ventura and Northern San Diego. The Los Angeles County Metropolitan Transportation Authority operates 6 rail and subway lines providing transportation to downtown from outlying areas.

Assessment of Transit System

Metro is the predominant regional transportation operator with over 200 bus routes. In addition, there are 16 municipal operators that provide local and regional transportation in various jurisdictions throughout the County. Over 80 local cities operate a third tier of fixed route services and paratransit services within their communities that link to the regional transit systems, often targeted to meet the needs of the transit dependent senior, disabled and general public within their communities. Access Services, Inc. (ASI) operates American Disabilities Act (ADA) paratransit services for all eligible Los Angeles County residents.

Over 536 million fixed route transit trips are taken each year with 72% of the trips provided by Metro, 26% of the trips are provided by municipal operators, and 2% of the trips are local provided by the local cities’ fixed route services.

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<tr>
<td>Metro Rail</td>
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Final Grade

Applying an equal weight to each of these conditions, the overall grade for the flood control infrastructure for Los Angeles County is a B+.

Investment Needs

In order to keep the flood control facilities of the Los Angeles County Flood Control District (LACFCD) in good operating condition, an estimated additional investment of approximately $48 million annually is required. Without this needed investment, the County's flood control system will deteriorate and flood protection for the general public will be jeopardized.

Recommendations

- Support additional funding to keep the County’s flood control infrastructure in good operating condition
- Continue to expand the view of flood control to include improving water quality and reducing pollution
- Support local agencies in their efforts to obtain additional funding to deal with the unfunded water quality mandates

Sources

- LACFCD Maintenance Management System (MMS) utilized by the County of Los Angeles Department of Public Works
- Flood insurance information was provided by County of Los Angeles Department of Public Works, Watershed Management Division
- Flood Zone A area, Federal Emergency Management Agency’s Flood Insurance Rate Maps
The San Pedro Bay Ports (Ports) consist of the Port of Long Beach and Port of Los Angeles, which represent the fifth busiest shipping terminal complex in the world. The Ports have conducted an infrastructure assessment of the entire Harbor District using existing records. The assessment consisted of evaluating eight different components of the Ports’ infrastructure, including wharves, railroads, roadways, utilities, channels and berths, container terminals, other marine terminals, and gantry cranes. Together they provide the basis for the efficient operation of the Ports’ system. To ensure a consistent process to grade the components, a scoring system was jointly developed by the two Ports.

Assessment of Existing Ports

The Ports and their infrastructure have an important role in the movement and supply of our nation’s goods and materials. Overall, infrastructure in the Ports is in good condition. To maintain current levels of service, the regular assessment and upgrade of the Ports’ infrastructure is vital to facilitate the exchange of cargo from water to land via rail or truck and visa versa. It is equally vital to ensure an on-going maintenance program and continued

Act for the 21st Century (TEA-21) as they relate to highway programs
• Support Increase Congestion Mitigation and Air Quality Improvement (CMAQ) funding and Surface Transportation Program (STP), and HOPP funding for Los Angeles County without adversely impacting other transportation funding programs
• Endorse development and implementation of improvements to increase arterial and freeway system capacity and efficiency
• Endorse the Los Angeles County Mobility-21 resolutions that seek additional revenues to meet Los Angeles County’s street and highway needs

Sources
• Caltrans, California Department of Transportation
• City of Covina
• City of Downey
• City of Los Angeles
• City of Palmdale
• City of Pasadena
• City of Pomona
• City of Torrance
• Los Angeles County Department of Public Works, Road Maintenance Division
• 2010 Metropolitan Transportation Authority (MTA) Traffic Management Program Report
is based 50% on pavement condition and 50% on traffic congestion for a grade of C-. 

Investment Needs

An investment of approximately $195 million is required to maintain the existing conditions and approximately $430 million is required to improve the conditions of roadway pavement to an acceptable state of repair. State highways and freeways require an additional $2.5 billion in roadway conditioning and maintenance over the next five years.

Without this additional maintenance, the overall condition of pavement in Los Angeles County will continue to decline each year. This decline would result in increases in vehicle repair costs, traffic delays, fuel consumption, and vehicle emissions.

In order to relieve congestion, the MTA estimates that approximately $300 billion is required to invest in Los Angeles County’s transportation system through 2040. The thirty-year plan will focus on improving arterial traffic flow by implementing capital improvements and better use of advanced technology. Additionally, the Southern California Association of Governments (SCAG) estimates that traffic on local streets is projected to increase 30% by 2030. There are many likely reasons, including continued growth in population and jobs, spillover from increasing freeway congestion, and more goods movement-related truck traffic. Without additional investments, peak hour speeds and the efficiency of the roadway network will continue to decline.

Recommendations

To improve LA County Streets and Highways, ASCE recommends the public to:

- Endorse both the state and Los Angeles County MTA Consensus Principles for Re-authorization of the Federal Transportation Equity 

redevelopment for the reliable movement of cargo. This extends outside of the Harbor District through connecting infrastructure such as the Alameda Corridor for trains or truck routes like the I-710 and I-110 freeways.

The scoring system was generally based on the age of the facilities as compared to their useful life or the physical condition of the facilities. A letter grade A was given for the more recently constructed improvements, and an F would be given when the useful life was exceeded. The useful lives utilized were: container wharves, 50 years; other wharves, 75 years; railroad trackage, 50 years; utilities, 50 years; and cranes 30 years. The results from the “levels of service” analysis were factored into the scoring for roadways; water depth and sufficient terminal acreage were factored into the channels and berths, container terminal, and other marine terminals components. Roadway conditions are based on vehicular levels of service.

Final Grade

The overall grade for the San Pedro Bay Ports based on an equal input of each of the eight components is B.

Investment Needs

Handling more than 40% of the nation's waterborne cargo, the San Pedro Bay Ports have experienced an average increase in cargo of 7% each year since the mid-1980's, reduced only by the 2008-09 recession. As we come out of this recession, it is anticipated that the 7% yearly increase in cargo will continue. In 2011, a total of 14.0 million twenty-foot equivalent units (TEUs) were handled at the Ports. It is projected that by 2015, a total number of 17 million TEUs will be handled by the Ports. In addition to containerized cargo, the Ports also handle breakbulk, dry bulk, and liquid bulk cargo, automobiles, as well as cruise ship and ferry passengers.
The Ports are looking to continue major improvements with a projected total investment of $3.5 billion over the next five years. A major portion of these investments is for terminal developments and for environmental and security improvements. Although a large portion of the funding for these improvements comes from revenue generated by the shipping companies, there is a need for state and federal assistance in the amount of $1.2 billion for a portion of the infrastructure related improvements and most notably for assistance with needed roadway, rail, bridge, environmental, and security projects. $130 million has already been invested in clean air, water quality, and security related projects in the past year. It is equally important that the adjoining roadways, freeways, bridges, and railways in the surrounding region also receive improvements for the efficient movement of goods through this global gateway.

**Recommendations**

Support federal and state funding for the following San Pedro Bay Ports infrastructure items over the next five years. These items have received similar funding in the past and continue to require outside state and/or federal funding.

The Bridges amount, shown on the table below, includes funding for the replacement of the Gerald Desmond Bridge. Wharf Cold Ironing, or

<table>
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<th>CATEGORY</th>
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<tr>
<td><strong>Total:</strong></td>
<td><strong>$1.2 billion</strong></td>
<td><strong>$3.5 billion</strong></td>
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**Traffic Congestion**

Traffic congestion was scored on freeway and arterial Level of Service (LOS) data compiled from various cities within the County of Los Angeles (Covina, Downey, Palmdale, Pasadena, Pomona, and Torrance), Caltrans, and the City of Los Angeles. Freeway LOS is a ratio of vehicles counted over capacity. Arterial LOS uses a ratio of vehicles counted over intersection capacity. LOS data for freeways and arterials was measured during both AM and PM peak traffic conditions. The study includes 83 arterial monitoring stations and 81 freeway monitoring stations.

Letter grades assigned to LOS scores are based on an A to F grading scale. The combined freeway and arterial grade is D.

Data showed that half of the freeway system operates at the most congested levels in the morning and afternoon rush hours. Many freeway segments experience congestion in both directions during these times, an unfortunate expansion of the traditional suburb-to-downtown commute pattern. Similarly, 40% of arterial intersections in the morning rush hour and 50% of the intersections in the afternoon rush hour operate at these diminished LOS levels.

**Final Grade**

In general, pavement condition and traffic congestion are equally important when considering the overall grade for streets and highways. The final grade
The assessment of Los Angeles County streets and highways consisted of pavement condition and traffic congestion. The pavement condition component was scored based on maintenance records from Caltrans, the County of Los Angeles, and all cities within the County of Los Angeles. Traffic congestion was scored based on capacity data from various cities within County of Los Angeles (Covina, Downey, Palmdale, Pasadena, Pomona, and Torrance), Caltrans, the City of Los Angeles, and the County of Los Angeles.

**Assessment of Streets and Highways**

The County of Los Angeles, the City of Long Beach, and the City of Los Angeles use computerized pavement management systems to rate pavement inventories. Individual pavement segments are rated on a scale of Very Good to Poor. Grades of A through F were assigned based on pavement segment ratings. Caltrans uses pavement distress to rate its pavement with no distress equivalent to grade A and major distress equivalent to grade F. A total of 2.65 billion square feet of street and highway pavement was studied.

Given the existing funding levels, Los Angeles County’s streets and roads can be expected to deteriorate rapidly within the next 10 years. In addition, costs of any deferred maintenance will only continue to grow.

To maintain the existing transportation network, we will need $195 million per year for next five years. Caltrans needs $250 million per year to maintain its roadway network to existing conditions.

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**Streets & Highways**

The assessment of Los Angeles County streets and highways consisted of pavement condition and traffic congestion. The pavement condition component was scored based on maintenance records from Caltrans, the County of Los Angeles, and all cities within the County of Los Angeles. Traffic congestion was scored based on capacity data from various cities within County of Los Angeles (Covina, Downey, Palmdale, Pasadena, Pomona, and Torrance), Caltrans, the City of Los Angeles, and the County of Los Angeles.

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**Sources**

- Port of Los Angeles Five Year Cash Expenditure CIP, January 2010
- Port of Los Angeles Handbook, 2009
- Port of Long Beach 2009 Strategic Plan, Annual Report and Facilities Guide
- Ports of Long Beach/Los Angeles Transportation Study, June 2001 / San Pedro Bay Rail Study, 2006
- Marine Transportation System, Southern California Freight Movement Infrastructure Needs Summary, 2002
- Ports of Los Angeles Baseline Transportation Study, April 2004.
- Port of Los Angeles Rail Synopsis, July 2004
- Port of Long Beach Pavement Management System, June 2011
The County of Los Angeles has the largest and most complex solid waste management system in California. It is comprised of 89 jurisdictions, each responsible for managing its own waste stream and reducing its disposal rate. In 2011, the County disposed of an average of 28,000 tons of solid waste per day. Considering the average disposal rate is anticipated to increase to 41,600 tons per day by 2024, both conventional and innovative approaches are being explored to effectively manage solid waste in the County.

Assessment of the Current Solid Waste Management System

The County has a robust solid waste management infrastructure consisting of an extensive network of public and private operations. Solid waste is collected by more than 100 permitted waste collectors. After much of the recyclable and reusable materials are extracted from the waste stream either by source separation or through materials recovery facilities, the residual waste is disposed of at 7 major and 4 small municipal solid waste landfills, and 2 waste-to-energy facilities within the County. About 20% of the residual solid waste is exported to out-of-County landfills for disposal.

In 2011, the County secured an additional 12 million tons of disposal capacity by granting a 30-year permit to the Lancaster Landfill located in the Antelope Valley. To further ensure long-term disposal capacity, the Los Angeles County Sanitation Districts are developing a waste-by-rail system to transport refuse by trains to the Mesquite Regional Landfill in Imperial County in preparation for the closure of one of the nation’s largest landfills, Puente Hills Landfill, in October 2013. While the system is anticipated to be completed in 2013, as an integral component of the County’s overall waste management system, it may not be utilized until after 2014, contingent upon factors such as market costs for disposal and transportation, as well as the viability of local landfills.

Sources

- County of Los Angeles Department of Public Works
- County Sanitation Districts of Los Angeles County
- City of Los Angeles Bureau of Sanitation
- City of Burbank
- HDR Engineering, Inc.
and evaluation of such technologies, these agencies are moving forward to develop demonstration and commercial-scale facilities in the region. Such facilities could be the first of their kind in the country, and will pave the way for additional projects by assessing the logistical and economic feasibility of such facilities, and compiling data to help formulate public policies for such developments in the future. Projects are also being pursued by the cities of Glendale and San Jose, the County of Santa Barbara, and the Salinas Valley Solid Waste Authority.

Currently, there are two waste-to-energy facilities in the County that transform refuse into electricity through a combustion processes. Several jurisdictions in the County rely on the diversion credit from these facilities to comply with the state’s waste reduction mandate. The City of Los Angeles is evaluating 2 short-listed proposals for the development of a commercial scale waste-to-energy facility capable of processing up to 1,000 tons per day of municipal solid waste.

**Final Grade**
The overall grade for Solid Waste Management is B+.

**Investment Needs**
It is estimated that over $450 million per year for the next five years is needed to operate and maintain the solid waste management infrastructure including implementing the recommendations below. Additional investments would be necessary for new and replacement projects.

**Recommendations**
- Providing resources to enhance source reduction and recycling programs in both the residential and commercial sectors including public education
- Pursuing legislation that would place responsibility on producers/manufacturers to manage products at the end of their useful life
- Developing additional facilities at strategic locations for processing

Additionally, accomplishments such as the County’s extensive household hazardous waste and electronic waste collection program, transition towards cleaner fuel collection vehicles, and widespread recycling and waste reduction outreach are cumulatively reflective of the County’s efforts towards sustainable waste management practices.

Despite these achievements there are many challenges impacting the solid waste management industry, such as:

- The closure of the Puente Hills Landfill on November 1, 2013, will affect the County’s disposal capacity as well as green waste management opportunities
- City and County jurisdictions striving to maintain the state mandated diversion rate will likely face higher tipping fees due to transporting green materials to out-of-county facilities
- Diminishing in-County landfill capacities, increasing disposal demands over the long term due to economic and population growth and public opposition towards establishing new facilities
- Increasing mergers among small and large haulers causing a growing trend towards transporting waste to privately owned landfills for economic benefit, even when hauling distances are greater
Recent economic downtown weakening consumer demand for recyclable materials and slowing the construction industry and manufacturing of goods. As a result, the rate of solid waste generated by businesses and the public has decreased dramatically since 2006.

Recycling and Reuse

Los Angeles County has been on the forefront of innovation and environmental stewardship for many years. In 2009, jurisdictions countywide collectively achieved a diversion rate of 55%, exceeding the state mandate of 50%. As a result of implementing a variety of waste reduction, composting, and recycling programs, such as 3-cart curbside collection programs, it is estimated that nearly 11 million tons of solid waste were diverted in 2011 from landfill disposal in the County. Additionally, the per capita disposal rate was reduced from 2,400 lbs/person/year in the late 1990s to 1,700 lbs/person/year in 2011.

The state legislature has routinely considered bills to raise the state diversion mandate above the current 50%. The most recent attempt was Assembly Bill 341, enacted in 2011. AB 341 established a state policy goal that at least 75% of solid waste generated must be source reduced, recycled, or composted by year 2020, and further requires commercial and public entities as well as multifamily residential dwellings to arrange for recycling services starting July 1, 2012. As a result, each jurisdiction began implementing its own commercial recycling program requiring high-quality waste collection and recycling services.

The County continues to support the development of local markets for remanufacturing recyclables and expanding markets for recycled products. As part of this effort, recycling market development zones continue to expand countywide to include additional cities. One of the salient issues resulted in the County’s reliance on foreign markets. This was particularly evident in light of the recent decline in the overseas market value of recyclable materials. With the impending closures of local landfills, recently enacted mandatory commercial recycling, and the potential for the state to increase the mandatory diversion rate for jurisdictions, developing stronger statewide and local markets for recyclables is even more critical.

The County is currently in negotiations with the Paint Stewardship Organization to implement a paint recovery program as a result of the enactment of AB 1343 in 2010, which requires paint manufacturers to develop and implement a program to collect transport, and process postconsumer paint. The County actively supports legislative initiatives that shift the burden of products end-of-life management from local governments to manufacturers and at the same time encouraging the marketplace to develop products with minimal toxic impacts in a cost-effective manner.

Conversion Technologies and Other Alternatives to Landfills

Conversion technologies are processes capable of converting post-recycled residual solid waste into useful products and clean, renewable energy. Various thermal, chemical and/or biological conversion technologies operate successfully in over 28 countries. Management of solid waste through these technologies, rather than through landfill disposal, would decrease net air pollutant emissions and greenhouse gases; utilize materials that are otherwise not recyclable or reusable; produce renewable energy and green fuels; reduce dependence on foreign oil; and preserve landfill capacities and fossil fuels while complementing California’s recycling infrastructure and complying with strict environmental safeguards.