



# 2012 REPORT CARD FOR TEXAS' INFRASTRUCTURE

An independent review of the current state of infrastructure needs, capability and funding in the State of Texas by the Texas Section of the American Society of Civil Engineers





# 2012 Report Card for Texas' Infrastructure



## About the Report Card

**Infrastructure is a part of our daily lives.** Too often we take it for granted, even though in a typical day, most of us use or are impacted by each of the infrastructure categories assessed in this *2012 Report Card for Texas' Infrastructure* by the Texas Section of the American Society of Civil Engineers (ASCE). Before you even leave the house, you will turn on a light, which works because of **energy** infrastructure; get dressed in the morning using **drinking water** and **wastewater** infrastructure; eat a piece of toast, made with wheat grown using water **dam** infrastructure and transported on **roads** and across **bridges**, or along **navigable waterways**. After breakfast you might watch your kids leave for **school** and then take **transit** to work. You'll take the garbage to the curb, which is disposed of using **solid waste** infrastructure, and if there's a heavy afternoon storm, **flood control** infrastructure will protect your house. In the evening you'll open a letter, mailed to your house using **aviation** infrastructure. We expect infrastructure to work efficiently and when it doesn't, we quickly find out how much we rely on it like our fellow New Yorkers in the wake of the devastating super storm Sandy.

**This Report Card is a useful and powerful tool.** Texas' infrastructure has to be maintained and modernized if it's going to serve the citizens, and this Report Card can tell you exactly how the infrastructure is doing using a "report card" style scorecard. Where infrastructure is not performing satisfactorily - whether in its current condition, future needs, funding, or other capacity - immediate action should be taken by the public servants who oversee these systems and by elected leaders to do what they can to take action to improve the grade.

**As civil engineers in the state of Texas, we have a responsibility to safeguard the life, health, property, and welfare of the public.** We believe it is part of this responsibility to provide the public, including our elected leaders, with critical information about the current state of our infrastructure, which is the main goal of this Report Card. Our hope is that with this knowledge, the public will increase support for infrastructure improvement and maintenance and urge elected leaders to take action to prioritize funding so that our vital infrastructure meets the current and future needs of Texas citizens. The Texas Section of ASCE plans to periodically update the Report Card to inform the public and our elected leaders on where we have improved and where more resources should be allocated. With this effort, we hope to share our knowledge and expertise to make Texas a stronger, safer, healthier, and a more prosperous state.

## Development and Evaluation Process

Roth Consulting performed the data gathering and research to update the fact sheets while ASCE volunteers from public agencies, private firms, and non-profit groups contributed to the development of the Report Card. To validate the findings, peer reviews were then performed by a subject matter expert who had no prior involvement with the Report Card. The collaboration of public, private, and non-profit volunteers, along with the peer review process, resulted in this comprehensive assessment of Texas' infrastructure.



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In general, seven fundamental grading components were considered in developing the assigned grades for each category:

- **Capacity:** Evaluate the infrastructure's capacity to meet current and future demands.
- **Condition:** Assess the infrastructure's existing physical condition.
- **Funding:** Identify current level of funding and predicted current and future investment in the system.
- **Future Need:** Evaluate the cost to improve infrastructure and measure the projected demand.
- **Operation and Maintenance:** Evaluate the owners' ability to operate and maintain the infrastructure properly to preserve the system.
- **Public Safety:** Evaluate to what extent the public's safety is jeopardized by the condition of the infrastructure and what the consequences of failure may be.
- **Resilience:** Assess the infrastructure's ability to prevent or protect against significant threats and incidents and the ability to recover and reconstitute critical services with minimum damage to public safety and health, the economy, and security.

The *2012 Report Card for Texas' Infrastructure* followed a traditional letter grade scale:

**A = 90-100%**

**B = 80-89%**

**C = 70-79%**

**D = 51-69%**

**F = 50% or lower**



## Report Card Findings

The *2012 Report Card for Texas' Infrastructure* found that most of the infrastructure categories grades have not significantly improved, resulting in an overall grade of “C”. This grade indicates a below average condition in many infrastructure categories that received a poor “D or below” grade including roads, drinking water, dams, flood control, and schools. While the overall grade of Texas' infrastructure has improved slightly over the last four years, half of the infrastructure categories still received unsatisfactory grades to keep Texas competitive and remain one of the largest and fastest growing economies in the U.S.

Category	2008 Texas Grade	2012 Texas Grade	Comments
<b>Roads</b>	<b>D</b>	<b>D</b>	While the Texas Transportation Commission has encouraged innovation in alternative project deliveries and funding, overall maintenance has declined and funding for traditional projects has declined. Texas now ranks 43rd in highway spending per capita in the U.S., falling significantly from number 17 in 2008.
<b>Bridges</b>	<b>B-</b>	<b>B-</b>	In the past four years, TxDOT has made significant progress in eliminating structurally deficient bridges. Texas has 51,557 total bridges, which is 59% more than any other state. Of these, 10,137 bridges are still considered non-sufficient or load restricted. The number of both structurally deficient and obsolete bridges is expected to rise over the next 10 years. Funding is needed to achieve TxDOT's goal to improve and maintain existing and new bridge structures.
<b>Transit</b>	<b>C</b>	<b>C+</b>	The 2011 TTI Urban Mobility Study ranked Dallas/Fort Worth 5th and Houston 6th nationally in traffic congestion; however, much of the rural and smaller cities across the state are not experiencing congestion. In the past eight years, a number of cities in Texas have made progress in adding transit services, including buses, vanpools, passenger rail, etc. Texas remains heavily dependent upon federal and regional mobility funding to continue developing Light Rail Transit.
<b>Aviation</b>	<b>C+</b>	<b>C+</b>	Texas has 26 large commercial service airports with scheduled passenger traffic, emplaning 67.7 million passengers in 2010. Since 2004, primary commercial aviation facilities have kept up with demand. For the same period, general aviation, which includes 266 airports, has not kept up with demand due to the lack of funding. All Texas airports reported that current funding for maintenance is not adequate, due to the age of the infrastructure and a large need to address failing facilities.



Category	2008 Texas Grade	2012 Texas Grade	Comments
<b>Schools</b>	<b>D-</b>	<b>D-</b>	Texas has 8,526 public elementary/secondary school facilities, serving a student population of 5 million. Decreases in state funding has limited the ability of schools to maintain existing facilities. Funding for capital and technology improvements are primarily covered by local bond elections. Recent local elections for bond funding and tax increases for education purposes have received mixed results.
<b>Drinking Water</b>	<b>D</b>	<b>D-</b>	Water supplies are a critical issue for Texas. Most of the available water is located on the eastern side of the state; however, the water demand is primarily located in the central and western portions of the state. If a major drought occurs in Texas in 2060, approximately 41% of municipal demand for water could not be satisfied by current water sources. TWDB estimates about \$212 billion will be needed in 2060 for water supplies, treatment and distribution, wastewater collection and treatment and some flood control projects.
<b>Wastewater</b>	<b>C-</b>	<b>C-</b>	Large investments by most urban centers have improved wastewater infrastructure. However, due to population growth and aging wastewater infrastructure, Texas needs to invest \$11.2 billion over the next 20 years to upgrade facilities. Federal standards have become more stringent, but funding has not kept up pace with these standards. Wastewater reuse has been increasing due to the restricted availability of new water supplies.
<b>Dams</b>	<b>D-</b>	<b>D-</b>	Texas currently lists 7,126 non-federal dams including 1,046 high hazard (probable loss of life) and 725 significant hazard dams (potential loss of life). An average of four dams fail in Texas each year. The Dam Safety Program has received additional funding from the state for dam inspection and review of emergency action plans since most high hazard dams do not have regular inspections or maintenance. The recent legislative session in Texas exempted many small privately owned dams from a number of the program requirements. There is still no state funding to cover the cost of dam repairs, and federal funding is very limited.
<b>Solid Waste</b>	<b>B</b>	<b>B+</b>	The per capita solid waste disposal rate in Texas has decreased from 6.5 pounds per capita per day in 1993 to 6.2 pounds per capita per day in 2010. Due to increases in permitted capacity and in technology, landfill capacity has increased. Recycling and use of methane gas for green power have increased. Private landfill operators have an economic incentive to improve their facilities. Solid waste infrastructure and management services are funded by private companies and local governments.





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Category	2008 Texas Grade	2012 Texas Grade	Comments
<b>Navigable Waterways</b>	<b>D</b>	<b>C</b>	The Gulf Intracoastal Waterway (GIWW) is a federally maintained channel that links Gulf Coast ports and the inland waterway system. In combination with ports, Texas ranked 1st in the nation in total waterborne tonnage moved in the U.S. The GIWW has received additional funding in the last eight years for its maintenance and repair. The level of maintenance and repair of the aging infrastructure is directly tied to the amount of federal funding received.
<b>Flood Control</b>	<b>D-</b>	<b>D</b>	Since 2004, the National Flood Insurance Program State Coordinator office has been relocated under TWDB; additional staff and funding for mapping and planning projects has also been provided for the office. Texas still has no statewide floodplain management plan and is not a participant in the National Flood Insurance Program, although many of its communities are. Texas leads the U.S. in terms of dollars paid for flood claims. Other than low-interest loans and small grants, Texas does not fund flood control infrastructure.
<b>Energy</b>	<b>B+</b>	<b>B+</b>	The majority of Texas - 85% of electricity usage and 75% of the geographic area - is served by the Electric Reliability Council of Texas (ERCOT). From 2004 to 2012, the surplus reserve margin decreased from 30% to 12%. In 2004, two-thirds of the generation was supplied from natural gas. In 2011, approximately 40% of the electricity in Texas was generated using natural gas as the primary boiler fuel, 39% from coal, 12% from nuclear, and the rest from wind and other renewables. ERCOT has a total of 72,500 megawatts of generation capacity, with a load of 66,000 megawatts. The ERCOT service area has 40,500 miles of transmission lines.
<b>GPA</b>	<b>C-</b>	<b>C</b>	

The Report Card and accompanying Fact Sheets will be made available on the Texas Section's website, and we encourage you to meet with your local representatives in person and discuss the issues found in this Report Card. If you would like to become more involved in this effort, contact Stephen B. Crawford PE, Texas Section Vice President Professional, at [scrawford@halff.com](mailto:scrawford@halff.com) or through the Section office at [office@texasce.org](mailto:office@texasce.org).



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