

2015 REPORT CARD



AVIATION B-



BRIDGES B



DAMS C-



DRINKING WATER C-



LEVEES C-



RAIL C+



ROADS D+



TRANSIT C+



WASTEWATER C

GPA = C

Each category was evaluated on the basis of capacity, condition, funding, future need, operation and maintenance, public safety, innovation and resilience.

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So, how is Arizona's infrastructure doing overall and what needs to be done?

The Arizona Section of the American Society of Civil Engineers (ASCE) compiled a volunteer team of civil engineers from the public, private and non-profit sectors with wide-ranging infrastructure industry expertise to prepare a school-style Report Card for Arizona's Infrastructure. Using a simple A to F grading system, the Report Card takes stock of information related to Arizona's infrastructure for 9 specific infrastructure types and what should be done to raise the grades.

This Report Card builds upon the findings of ASCE's National Report Card for America's Infrastructure, most recently published in 2013. Evaluations were based on the following criteria:

- **Capacity** – Does Arizona's infrastructure have adequate capacity to serve the public now and in the future?
- **Condition** – What is the condition of the existing infrastructure and how will it affect its reliability and safety?
- **Operations and Maintenance** – Is there adequate funding and planning for proper operations and maintenance now and in the future? Will facilities meet regulatory requirements?
- **Funding** – Is there adequate funding for capital and capacity improvements as well as operations and maintenance to extend the working life of infrastructure assets?
- **Public Safety** – Without needed improvements, will public safety be jeopardized? What are the consequences of a failure to maintain the state's infrastructure?
- **Resilience** – Is the current infrastructure adequate to protect against natural hazards? Can critical services be recovered quickly in an emergency?
- **Innovation** – How innovative is the operation, financing, and maintenance of the infrastructure?



www.infrastructurereportcard.org/arizona

2015 REPORT CARD FOR Arizona's Infrastructure



RAISE THE GRADE 5 Key Solutions

- 1 We need infrastructure every day so we have to keep it working with good maintenance.**
Maintenance is the every day work you just have to do to keep things moving, and Arizona's infrastructure needs it. Sometimes it's all about the basics, and maintenance is the basic first step to good infrastructure.
- 2 Investing in infrastructure has allowed Arizona to grow, and investing in smart projects will keep it growing.**
Arizona has seen exciting new infrastructure projects over the last decade become selling points for the state and bring in new residents and businesses. New investments in critical corridors and freight connections can lead to new opportunities. Let's keep this going!
- 3 Every community's leaders should order an infrastructure health check-up.**
Just like your body, infrastructure is a system. The water pipes and roads and railways are the arteries that keep the state moving so it's worth asking – how is your area's infrastructure doing? Just like a physical, infrastructure needs regular evaluations.
- 4 Borrowing from infrastructure funds just means you'll pay more tomorrow.**
Arizona's leaders have to make tough budget choices, but not using infrastructure dollars for needed projects today will lead to more expensive project costs down the road and infrastructure that hinders growth rather than supports it.
- 5 Planning for Arizona's future starts today with sustainable choices, innovative investments, and resilience.**
Arizona's projected growth is both an opportunity and a challenge. It will require continued focus by the state's leaders to adopt sustainable practices and innovate to be competitive.

The Report Card for Arizona's Infrastructure shows that some of our state's infrastructure needs attention both for today and the future. Many of Arizona's grades are low Cs and on the edge of slipping into Ds - especially as the state grows.



WHAT YOU NEED TO KNOW ABOUT ARIZONA'S INFRASTRUCTURE...



RAIL C+

Rail infrastructure in Arizona serves both freight and passengers. Most of the Class 1 freight, short line, industrial, and tourist railroads within Arizona were originally commissioned between 1880 and 1920, with a few exceptions, these lines have kept up with routine maintenance and modern improvements. In 2011, the State Rail Plan reported the operational performance of freight railroads was good but in need of a long-term vision and that there is adequate market reach. However, some rail lines are limited by urban encroachment, unavailable land for yard expansion, limited connections to Mexico and constrained freight car fleet markets. All of the railroads within Arizona are privately funded, and while investment has been high for two decades, future needs for capacity and improvement could require up to \$850 million through 2035. Passenger rail operations and planning in Arizona consist of Amtrak intercity, interregional commuter rail, and regional commuter rail. Estimated needs for Arizona's rail passenger services are between \$6 to \$12 billion to continue to serve urban corridor markets and be a viable alternative to air and car travel for intercity markets.



BRIDGES B

Arizona has 8,035 bridges listed in the state bridge inventory encompassing 53 million square feet of bridge deck, 29th largest in national ranking. Arizona has 256 bridges listed as Structurally Deficient, and the estimated replacement cost for the SD bridges alone is about \$220 million, costing about \$100 per square foot. Roughly 50% of Arizona's bridge inventory is more than 40 years old and 80% more than 20 years old. Age is an important indicator for bridges, not only because of the passage of time, but also other factors relevant to their age, like evolving design standards as well as traffic and environmental "wear and tear." Arizona's bridges are generally in good condition due to the bridge inspection program; however, funding to maintain them and to support the State's above average growth rate will be a major issue in the years ahead. Only 51% of fees like the Vehicle License Tax are actually used for transportation and federal funding has become unreliable.



DAMS C-

Dams, like the Hoover Dam and Roosevelt Dam, have played an important role in Arizona's development for over 100 years. In addition to well-known landmarks, there are 373 registered dams operating in Arizona. Arizona's dam inventory is aging, and the number of high-hazard dams is on the rise with 107 classified as high hazard in 2014. A high-hazard dam is one where failure or mis-operation is expected to result in loss of life and may also cause significant economic losses, including damages to downstream property or critical infrastructure, environmental damage, or disruption of lifeline facilities. Many of these dams were built as significant-hazard and low-hazard potential dams protecting agricultural land; however, with an increasing population and greater urban and suburban development downstream from these dams, the overall number of high-hazard dams continues to increase. About 39% of Arizona's jurisdictional dams are privately owned, and due to limited owner resources and a lack of available funding, many of these dams lack proper maintenance and timely rehabilitation.



LEVEES C-

A levee is a man-made structure, usually an earthen embankment, designed to contain, control, or divert the flow of water to provide protection from temporary flooding. Levees have been a part of Arizona's flood management system for over a century, yet public interest in the condition of levees has increased as disasters in other places have reminded us of the potential hazard that can result from under designed or poorly maintained levees. Arizona has approximately 1,293 miles of levees, and while there is a limited number of levees and dikes in Arizona, there are still significant impacts associated with failure of these facilities.



TRANSIT C+

Within Arizona there are 40 transit providers in 13 counties using express buses, light rail, streetcars, neighborhood circulators and shuttles, rural connector buses, dial-a-ride and vanpools to serve the state's 6.7 million people. Over the next 25 years, the state's report on needs estimates that capital and operations will cost about \$25 billion to keep systems at a "good" or "better" condition rating, but surprisingly, there is no current dedicated, statewide funding source for transit. Arizona is growing and so are the number of transit options and riders, but even within metropolitan areas of Arizona, much of the population does not have reasonable accessibility to transit. As the population ages and younger generations drive less, the imbalance between transit need and transit availability will become more apparent within Arizona.



DRINKING WATER C-

Safe and adequate water supplies and treatment are critical to the future and economy of Arizona, the 4th driest state in the nation. Arizona's drinking water comes 4 sources – the Colorado River, surface water from lakes and rivers, groundwater, and reclaimed water— and is delivered by nearly 1,700 public water systems which must be maintained and upgraded to meet current and future demands. Much of Arizona's water infrastructure is over 30 years old, and one of the challenges facing Arizona's water infrastructure is the need to rehabilitate or replace deteriorating infrastructure. The state's approximately 800 community water systems reported a need of \$7.4 billion for Arizona's public drinking water systems over the next 20 years including: \$5 billion to replace or rehabilitate deteriorating water lines, \$1.4 billion to construct, expand, and rehabilitate treatment infrastructure, \$684 million to construct or rehabilitate water storage reservoirs, and \$334 million to construct or rehabilitate wells or surface water intake structures. As the water infrastructure ages, pipes begins to deteriorate and break causing street and property damage and leak, wasting valuable treated water; steel water storage tanks need to be sand blasted and recoated to prevent rust and deterioration; and mechanical equipment such as pumps and motors wearing out and needing to be replaced. Over 2,600 miles of transmission and distribution mains are currently in need of rehabilitation or replacement.



WASTEWATER C

Wastewater systems, made up of pipe systems and treatment facilities, provide a safe and cost-effective way to dispose of and clean used water from homes and industry. They protect the environment and water quality as well as recapture and reuse reclaimed water, which is critical to the state's water supply. Arizona's innovative reuse of treated, reclaimed water has resulted in reuse of as much as 85% of the state's wastewater. Arizona has 120 wastewater treatment plants of varying sizes with several dozen more planned as flows continue to increase with the state's growth. Some smaller communities do not have collection and treatment systems or use outdated methods like lagoons, and 20% of the state's wastewater treatment plants, mostly smaller rural communities, were receiving flows at or beyond their permitted capacity. Many portions of Arizona's wastewater systems are 50 years old or more, and the warm climate shortens their useful life and causes corrosive hydrogen sulfide to corrode and break pipes. Due to the recession, many of Arizona's wastewater plants suffer from deferred maintenance issues that now require attention. Wastewater flows statewide are projected to more than double to nearly 850 million gallons per day within the next 20 years, and the identified need for wastewater treatment and collection improvements is \$4.4 billion. Another future challenges facing Arizona's wastewater facilities is the need to deal with increasing salinity caused by widespread use of salt-based home and industrial water softening systems, which significantly compounds the problem.



ROADS D+

Arizona's roads, support, maintain, and can increase the economic activity of every town, city, county and Arizona, but they can also have the opposite affect without maintenance and management. Seventeen percent of Arizona's urban roads are in poor condition, and driving on roads in need of repair costs Arizona motorists \$1.5 billion a year in extra vehicle repairs and operating costs –that's \$318 per motorist! Arizona's system of 60,000 miles of roadways serves as a critical link moving over 6 million people who travel 63 billion miles annually as well as goods throughout the state and country. The Arizona Department of Transportation estimates that over the next 25 years a minimum of \$24 billion will be required just to maintain current assets, with a minimum of \$49 billion required to bring the state transportation system up to acceptable performance levels, and as much as \$193 billion required support an aggressive growth strategy. Fewer than 50% of Arizona's roadway needs can be addressed with expected baseline revenues. Arizona's and the national primary funding source, a gasoline sales tax, is not keeping up with needs, and the diversion of transportation related taxes and fees to other areas is resulting in a funding shortfall that won't allow Arizona to keep up with projected growth and commerce.



AVIATION B-

Arizona's 83 airports vary in size and function from large commercial service facilities to small rural airports. Arizona's largest airport, Phoenix Sky Harbor International Airport, is the 6th busiest airport in the U.S. with nearly 20 million passengers passing through its boarding gates each year. Arizona ranks 5th in the U.S. for active general aviation aircraft, and 5 of the state's airports are listed in the nation's top 25 for number of aircraft operations. An efficient and well maintained airport system is critical to the economic growth of the state. Over 400,000 jobs (that's 16.8% of all the state's employment) are directly or indirectly related to aviation. The system also supports the quality of life of Arizona's residents by accommodating business, recreational, health, welfare, and safety related services such as aircraft firefighting activities, search and rescue missions, medical patient transport, news reporting, and business and recreational travel.