

US infrastructure dilapidated, underfunded

Clement Daly
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The American Society of Civil Engineers (ASCE) has given the United States a grade of D+ for the state of its infrastructure in its latest Report Card. While the grade is slightly better than the D received in its last report card four years ago, the rating means America's infrastructure is "poor" and "at risk." Meanwhile, the level of needed investment has surged from an estimated \$2.2 trillion to \$3.6 trillion today.

According to the ASCE, "The infrastructure is in poor to fair condition and mostly below standard, with many elements approaching the end of their service life. A large portion of the system exhibits significant deterioration. Condition and capacity are of significant concern with strong risk of failure."

The ASCE has been issuing its infrastructure report cards every four years since 1998 in an attempt to influence public policy. In no report has ASCE graded America's infrastructure above a D+, largely because of "delayed maintenance and underinvestment."

The ASCE assessment has expanded over the years to now include 16 infrastructure categories: roads, bridges, rail, aviation, and transit; drinking water, waste water, solid waste, and hazardous waste; dams, levees, inland waterways, and ports; and schools, energy, and public parks and recreation. The grades are determined by eight criteria: capacity, condition, funding, future need, operation and maintenance, public safety, resilience, and innovation.

While no category experienced a decline since last report card, grades ranged from a high of B- for solid waste to a low of D- for inland waterways and levees on this year's report card. The ASCE attributes the slight increases in several categories to "short-term boosts in federal funding," gains that will be lost since these investment levels were not sustained.

Both roads and bridges improved slightly to a D and C+, respectively, since last report card. However, the ASCE reports that nearly one third of the nation's major roads are in "poor or mediocre condition, costing U.S. motorists who are traveling on deficient pavement \$67

billion a year, or \$324 per motorist, in additional repairs and operating costs."

The \$91 billion currently being invested by the Obama administration in the nation's more than 4 million miles of public roadways is just above half the \$170 billion the Federal Highway Administration (FHWA) estimates would be needed annually to significantly improve road conditions and performance.

As the ASCE points out, "The ultimate cost of poor road conditions is significantly more over time than the cost to maintain those same roads in good condition," making the continual starvation of surface transportation of investment simply irrational. At the same time, statistics indicate that "roadway conditions are a significant factor in approximately one-third of all U.S. traffic fatalities."

Meanwhile, the average age of the 607,380 bridges in the United States now stands at 42 years old, with more than 30 percent of the bridge stock exceeding its 50-year design life by FHWA records.

According to the ASCE, "Over two hundred million trips are taken daily across deficient bridges in the nation's 102 largest metropolitan regions." Nearly 67,000 bridges—one out of every nine—are considered to be structurally deficient, or requiring "significant maintenance, rehabilitation, or replacement." In Pennsylvania, nearly one out of every four bridges is structurally deficient.

The FHWA estimates America's bridge investment backlog at \$121 billion, while only \$12.8 billion is currently being spent annually. These deferred maintenance costs are only expected to grow with time.

The nation's levees remained unchanged at a D-, a scandal nearly seven years since a levee failure devastated New Orleans after Hurricane Katrina. "Public safety remains at risk from these aging structures, and the cost to repair and rehabilitate these levees is roughly estimated to be \$100 billion by the National Committee on Levee Safety," writes the ASCE.

The reliability of the nation's estimated 100,000 miles

of levees is still largely unknown. Most of the nation's levees are owned and operated by state, local, or private entities with little coordination. The nation still lacks a comprehensive national levee database and a National Levee Safety Program.

Similarly, the ASCE grades the nation's 84,000 dams at a D, with more than 4,000 of them considered deficient. There are nearly 14,000 dams in the US that are classified as high-hazard, meaning a failure is anticipated to cause a loss of life. About 2,000 of these high-hazard dams are among those considered deficient, of which only two thirds have emergency action plans in place in the event of an impending failure.

Like the nation's levees, only a fraction—about 4 percent—are owned, operated, and regulated by the federal government with more than two thirds owned by private entities. About 80 percent of the nation's dams are regulated and inspected by the states, yet not all states have a dam safety program. For those that do, the average state safety inspector is responsible for 207 dams.

While American drinking water quality remains relatively high, the ASCE gives its infrastructure a D due to its increasing age. The condition of the estimated 1 million miles of water mains in the US is largely unknown. At their oldest, some of these pipes date back to before the Civil War with wooden pipes still in use in places. In many cities, average pipe ages are between 70 and 90 years old. Not surprisingly, water main breaks are increasing in frequency with an estimated 240,000 breaks a year.

According to conservative estimates from the US Environmental Protection Agency (EPA) in 2007, the nation's water system needs \$334.8 billion invested over the next 20 years. Not meeting these investment needs, warns the ASCE, "risks reversing the environmental, public health, and economic gains of the last three decades." However, according to the ASCE, congressional appropriations have declined under the Obama administration to an average of \$1.38 billion annually, or about 8 percent of the need identified by the EPA.

Similarly, the more than 700,000 miles of public sewers and 14,780 wastewater treatment facilities in the US are aging and in poor condition, receiving a grade of D. "Although access to centralized treatment systems is widespread," explains the ASCE, "the condition of many of these systems is also poor, with aging pipes and inadequate capacity leading to the discharge of an estimated 900 billion gallons of untreated sewage each

year."

One of the most visible expressions of America's deteriorating infrastructure is its archaic and increasingly unreliable power distribution system, some of which dates back to the 1880s. "Today, we have an aging and complex patchwork system of power generating plants, power lines, and substations that must operate cohesively to power our homes and businesses," the ASCE explains.

According to a recent Associated Press report, over the past decade, the reliability of the US electrical grid has decreased, with blackouts taking 20 percent longer to fix even though consumers are paying 43 percent more to build and maintain local power grids. With 500,000 Americans losing power for an hour or more every day, the average consumer now loses power for 112 minutes a year—a 15 percent increase over last decade.

These statistics do not take into account the major outages that have plunged millions into darkness, often for weeks at a time, over the past few years. According to the ASCE, significant power outages have risen from 76 in 2007 to 307 in 2011. While these large-scale outages are often associated with major weather events, the vulnerability of the nation's electrical grid is inherent to its non-uniform operation by hundreds of separate for-profit entities.

The \$3.6 trillion in investment across 16 categories of infrastructure the ASCE estimates is needed by 2020 pales in comparison to the sums squandered on military adventures abroad and financial bailouts at home. For example, \$3.6 trillion represents about three-and-a-half years of the current quantitative easing program of the US Federal Reserve in which \$85 billion in assets are purchased each month to prop up the banks.



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