

ASSESSING THE STATE OF INFRASTRUCTURE: THE U.S. EXPERIENCE

A report card approach is increasingly being used in some jurisdictions as a tool for assessing the state of infrastructure. In the United States, the American Society of Civil Engineers (ASCE) has completed report cards on the state of infrastructure in Colorado, Wisconsin, Kentucky and several counties in California over the past couple of years. Most recently, the ASCE published its [2003 Progress Report for America's Infrastructure](#).

The ASCE produced the *2003 Progress Report* with the help of a 20-member advisory council composed of eminent civil engineers that determined progress and trends in twelve infrastructure categories since the *2001 Report Card on America's Infrastructure* by evaluating conditions, performance, capacity and funding¹. The *2003 Progress Report* concludes that roads, bridges, drinking water systems and other public works across the United States have shown little improvement since the ASCE first graded the country's infrastructure in 2001, and that some areas are threatened with further decline. The Report estimates that the United States must invest \$1.6 trillion² over the next five years to bring its infrastructure to acceptable levels.

Background

The earliest report on the state of America's infrastructure was published by the Council on Public Works Improvement, a short-lived presidential commission created to study and report on infrastructure. The Council's 1988 report, *Fragile Foundations: A Report on America's Public Works*, stated that "the quality of America's infrastructure is barely adequate to fulfill current requirements and is insufficient to meet demands of future economic growth and development."³ Infrastructure was given an overall grade of "C;" however, the Council was disbanded soon after and no national strategy for infrastructure improvement was consequently implemented.

In 1998, the ASCE issued its own report card for America's infrastructure. In the ten years since *Fragile Foundations*, the ASCE concluded that the state of infrastructure had declined from a grade of "C" to that of a "D". More recently, in March 2001, the ASCE conducted a full assessment and concluded that although half of the categories had improved slightly, the remaining categories had declined to maintain a low grade of "D+." The purpose of the *2003 Progress Report* is to provide a more comprehensive update on trends related to the state of infrastructure in the United States. In addition to the *2003 Progress Report*, the ASCE surveyed its members in August 2003, and, using the survey results, has created [summaries](#) of infrastructure within each state.

¹ The report includes twelve infrastructure categories: roads, bridges, mass transit, aviation, schools, drinking water, wastewater, dams, solid waste, hazardous waste, navigable waterways, and energy.

² US dollars. Figures throughout are in US dollars.

³ "Fragile Foundations: A Report on America's Public Works," (Washington, DC: National Council on Public Works, 1988), p.1.

Key Findings of the 2003 Progress Report

The ASCE's *2001 Report Card on America's Infrastructure* gave schools the lowest grade of "D-," and in the 2003 nation-wide survey, the majority of states ranked schools in their top three infrastructure concerns. According to the ASCE, there has been no change in schools infrastructure since 2001, despite the inadequacy of 75% of school buildings in meeting the needs of children.

The infrastructure categories of aviation, drinking water, wastewater and dams each received a grade of "D." Further, three of these categories are considered to be on a declining trend. Although the quality of drinking water remains good, the report states that the infrastructure for drinking water systems is ageing and that the country faces an estimated \$11 billion annual shortfall for replacing or rehabilitating these systems. Similarly, wastewater infrastructure has not changed in the past decade and faces a funding shortfall of \$12 billion, with the result that more than one third of U.S. surface waters do not currently meet water quality standards. Dam infrastructure is also a concern, as approximately 23% of dams are unsafe, and 10,049 are considered "high-hazard potential dams."

The *2001 Report Card* assigned roads a grade of "D+," while the *2003 Progress Report* noted they are on a declining trend. The vast majority of states place roads as their number one infrastructure concern. Further, the average "rush hour" increased by more than 18 minutes between 1997 and 2000, and the Federal Highway Administration (FHWA), in its *2003 Conditions and Performance Report*, estimated that traffic congestion costs the economy \$67.5 billion annually in lost productivity and wasted fuel. Transit infrastructure was given a grade of "C-" in the *2001 Report Card*, with a declining trend assigned in the *2003 Progress Report*. Funding levels are insufficient to meet the needs of transit ridership, which, according to the American Public Transit Association (APTA), is at a 40-year high and growing faster than any other mode of transportation.

Drastic improvements in solid waste infrastructure have been made in the past 20 years. These achievements were recognized in the *2001 Report Card* and the category for solid waste infrastructure was assigned the highest grade given, a "C+." Although the *2003 Progress Report* states that solid waste infrastructure has maintained an average performance since 2001, a number of achievements have been made: the amount of waste to landfills has decreased by 13% since 1990, the amount recovered through recycling has nearly doubled, and waste-to-energy plants manage 17% of the nation's solid waste. A new concern highlighted in the report is that of electronic waste.

Overall, the study reinforces the barriers to improving the state of infrastructure. With a US federal deficit of \$450 billion, continued population growth, voter opposition to infrastructure projects, deterioration of an aging system, and (since September 2001) increased diversion of infrastructure maintenance and construction resources to infrastructure security measures, infrastructure faces an up-hill battle.

Links for Infrastructure Canada

The main message of the ASCE in the report's policy recommendations is the need for new federal legislation and increased federal funding. The ASCE supports and promotes legislation such as *America's Better Classroom Act of 2003*, the *Second Century of Flight Act*, the *Water Quality Financing Act of 2003* and the *Clean Water*

Infrastructure Financing Act of 2003. The ASCE emphasizes the need to support and implement acts for which infrastructure funding has been previously committed. Increased funding would support the rehabilitation and improvement of infrastructure of roads, bridges, school construction and maintenance, and research and development. The ASCE recommends a number of other measures, including: establishing a federal, multi-year capital budget for public works infrastructure construction and rehabilitation; creating federal and state revolving loan funds for dam rehabilitation; expanding federal tax credits to support increased use of school construction bonds; creating a water trust fund to finance the national shortfall; and increasing federal funding of research on waste-to-energy programs. The *2003 Progress Report* further calls for the creation of a long-term infrastructure agenda to be developed by a new federal commission in the United States.

No comprehensive report such as the ASCE's *2003 Progress Report* currently exists in Canada. The 2002 Speech from the Throne committed the federal government to long-term measures to modernize Canada's public infrastructure. As the Infrastructure Canada Research Strategy recognizes, however, significantly improved knowledge of the state of Canada's infrastructure and the factors affecting it into the future is required in order to support the shift to more strategic, longer term evidence-based infrastructure policy and decision making. Such enhanced knowledge is critical for, amongst other things, setting policy priorities and future directions, assessing the economic, social and environmental impacts of federal infrastructure investments and communicating with stakeholders about the various roles they must play in addressing Canada's public infrastructure needs. The ASCE experience – and recent experience in Australia⁴ as well – confirms the importance of proactively engaging other levels of government and other sources of expertise such as professional associations in this work.

⁴ See the research note on "International Experience: Australia" available at <http://www.infrastructure.gc.ca/research-recherche/infraresearch/reports/notes/australia.pdf>.