Infrastructure Canada

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THE STATE OF INFRASTRUCTURE IN THE UNITED STATES: THE 2005 ASCE REPORT CARD

Background

The state of infrastructure in the United States is continuing to deteriorate according to the American Society of Civil Engineers (ASCE). The ASCE has monitored and graded the state of America's infrastructure since 1998 when it first released a national infrastructure report card. According to the *2005 Report Card for America's Infrastructure* - the third and most recent of such report cards -- the overall trend is a decline in the state of infrastructure. Although the ASCE gave improved grades for some categories of infrastructure, the cumulative grade for this latest report card is a "D," whereas the 2001 report card received an overall grade of D+.

In addition to the 1998, 2001, and 2005 Report Cards, the ASCE released a *2003 Progress Report for America's Infrastructure*, which evaluated progress and trends in infrastructure without issuing new grades. The 2003 Progress Report estimated that the United States needed to invest $1.6 trillion[1] over the subsequent five years to bring infrastructure up to an acceptable level. The 2005 Report Card maintains that same investment estimate, adding the caveat that this number does not include security investment needs.

To produce the 2005 report, the ASCE assembled a panel of 24 of the nation's leading civil engineers and conducted an extensive literature review, analyzing hundreds of studies, reports and other sources. It also surveyed more than 2,000 engineers to determine what is happening in the field. Using the survey results, the ASCE created summaries of infrastructure within each state.

The grading system used for this report is based on an infrastructure category meeting a percentage of given criteria. In the United States, percentage ranges are summarized as follows: 60 to 69% is considered to be a D; 70 to 79% is considered to be a C; 80 to 89% is a B; and over 90% is an A. For example, roads would receive a grade of C if 77% of roads were in good condition or better. The ASCE assigned grades based on condition and capacity, and funding versus need. The Advisory Council reviewed and revised base grades, sometimes adding a '+' or a '-', and sometimes adjusting for a full letter grade, to reflect current positive or negative trends.

Key Findings

In addition to the twelve categories[2] included in the 2001 Report Card, the 2005 Report Card includes three new categories: public parks and recreation, rail, and security. The ASCE gave security an "I" for incomplete because information available to engineering professionals is insufficient for accurately assessing its status. Public parks and

[1] US dollars. Figures throughout are in US dollars.

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

recreation, and rail both received a grade of C-. Rail infrastructure is in demand. Freight rail tonnage is expected to increase at least 50% by 2020. To meet increased demand while maintaining existing infrastructure, the report estimates that the freight railroad industry needs to spend $175-$195 billion over the next 20 years. Including railroad expansion necessary to accommodate intercity passenger rail service, rail infrastructure needs annual investments of $12-$13 billion.

Solid waste received the highest grade, C+, and drinking water, wastewater and navigable waterways received the lowest grades, D-. Drinking water infrastructure and wastewater infrastructure fell from a D in 2001. Across the nation, enough clean, treated drinking water to serve the population of the state of California – six billion gallons (22.7 billion litres) – is lost every day, mostly due to old, leaky pipes and mains. The Report Card argues for increased federal investment in drinking water infrastructure and suggests that nearly $1 trillion is needed over the next 20 years for critical drinking water and wastewater investments. Federal funding for drinking water provided through the Safe Drinking Water Act State Revolving Loan Fund is only $850 million for FY 2005, which is less than 10% of the total national funding requirements.

Sanitary sewer overflows caused by wastewater infrastructure deficiencies such as blocked or broken pipes result in the release of as much as 10 billion gallons of raw sewage yearly. Combined sewer overflows, which are discharges from sewers that carry both sanitary sewage and runoff from streets, parking lots, and rooftops, discharge 850 billion gallons of raw sewage annually into rivers, streams, lakes and oceans. Despite the environmental and human health impacts of these infrastructure inadequacies, the Bush Administration cut federal wastewater funding in 2005 and has proposed to cut funding by a further 33% in 2006.

Navigable waterways fell by two grade points, more than any other category, from a D+ to a D-. Over 10% of locks still in use in the U.S. were built in the 19th century, and almost half of all locks in use are more than 60 years old. The ageing infrastructure cannot support the growing traffic loads on domestic waterways.

Aviation infrastructure improved from a D to a D+, partly due to decreased demand and moderate funding increases. Air travel in the US was at an all-time high before the economic slowdown at the beginning of the decade and the terrorist attacks of September 11, 2001. Federal funding increased with $9.9 billion authorized for the Airport Improvement Program (AIP) for fiscal years 2001-2003 and $14.2 billion for the AIP for 2004-2007.

Energy and hazardous waste each received a grade of D. The weakest link in energy infrastructure is the state of the U.S. electric transmission grid. Transmission capacity and maintenance expenditures on transmission are decreasing. New technology such as fuel cell energy production near or at customers' homes and businesses ("distributed generation") could help alleviate problems with energy transmission infrastructure. Hazardous waste sunk from a D+ in 2001 to a D in 2005. Federal funding for clean-up of the worst hazardous waste sites in the U.S. reached its lowest level since 1986 in FY 2005.

The report stresses the economic benefits of investing in infrastructure, including millions of potential jobs. It also highlights some of the human health risks of insufficient funding

for infrastructure. As in its previous report cards, the main message of the ASCE is the need for new federal legislation and increased federal funding.

Policy Recommendations

The report calls attention to the importance of federal investments in infrastructure and suggests that a new federal budget process, one that differentiates between expenditures on current consumption and long-term investment, could significantly improve infrastructure in the United States. The ASCE believes that a federal capital budget could reduce the constant conflict between short-term and long-term maintenance needs. For example, in terms of rail infrastructure, the current federal budget process does not differentiate between asset replacement or renewal for maintaining existing service and the long-term investment needed to add capacity and improve performance in travel time and service frequency.

The ASCE recommends a number of other measures, including: re-authorizing the *Transportation Act, TEA-21*, before it expires for the sixth time in May 2005; supporting the Federal Shore Protection Program including its nourishment and environmental restoration components; restoring the 17% funding cut proposed for the Aviation Improvement Program; passing a Water Resources Development Act; amending the Inland Waterways Trust Fund Act; and enacting a federal water infrastructure trust fund act.