Failure To Act – Closing the Infrastructure Investment Gap

American Society of Civil Engineers

Every four years, the **American Society of Civil Engineers** (ASCE) publishes *The Report Card for America's Infrastructure*, which grades the current state of national infrastructure categories on a scale of A through F. Since 1998, America's infrastructure has earned persistent D averages and the failure to close the investment gap with needed maintenance and improvements has continued. When the next *Report Card for America's Infrastructure* is released in 2017, it will provide an updated look at the state of our infrastructure conditions, but the larger question at stake is the implication of D+ infrastructure on America's economic future.

If none of these infrastructure gaps are addressed, the U.S. is expected to lose nearly $4 trillion in GDP by 2025 and $18 trillion in GDP over the 25 year period of 2016 to 2040, averaging over $700 billion per year. From 2016 to 2025, each household will lose almost $3,400 each year in disposable income due to infrastructure deficiencies; and if not addressed, the loss will grow to an average of $5,100 annually from 2026 to 2040. From 2016 to 2025, households will average a cumulative loss $34,000 in disposable income; and if infrastructure deficiencies are not addressed, households will average an additional cumulative loss of $76,000 in discretionary income from the years 2026 to 2040.

Even though net job impacts are counted in millions of jobs lost from the U.S. due to insufficient infrastructure investment, overall economic impacts in dollars lost in the economy, measured by business sales and GDP will be even more dramatic than impacts on overall number of jobs. Job losses in part will be mitigated by more people working for less money. Many of these jobs will be in replacement for technology based and education-driven industries that are the basis of long-term economic development.

Infrastructure is the backbone of the U.S. economy and a necessary input to every economic output. It is critical to every nation's prosperity and the public's health and welfare. Each Failure to Act study demonstrates that deteriorating infrastructure, long known to be a public safety issue, has a cascading impact on our nation's economy, impacting business productivity, gross domestic product (GDP), employment, personal income and international competitiveness. The economic stakes of America's infrastructure systems are high because its condition can either help or hurt the productivity of the economy. Poor infrastructure affects business productivity as well as every sector and region of the U.S. because when one part of the infrastructure system fails, the impact can spread throughout the system and economy. **The U.S. economy relies on low transportation costs and the reliable delivery of clean water and electricity to businesses and households to offset higher wage levels and costs.**

The investment gap for waterborne infrastructure is roughly equivalent to the initial Failure to Act assessment. In the 2016–2025 short term, the average annual gap is expected to decrease from $1.8 billion to $1.5 billion. From 2026 through 2040, the average annual gap is expected to increase to $1.9 billion, compared with $1.6 billion in the initial study. As a result, the 25 year gap is expected to be $43 billion, compared to $42 billion in 2015 dollars in the earlier study. This gap applies for waterside improvements, including dredging and lock and dam repair and not privately owned landside infrastructure and equipment.

The U.S. inland waterway system consists of over 12,000 miles of inland and intra-coastal waterways, with over 240 lock chambers, along with over 300 commercial harbors. Domestically, 5% of all tonnage moved in the U.S. and almost 4% of the total value of all freight transported over the entire U.S. transportation system is moved by water. This includes approximately 20% of all crude petroleum, 6% of all coal and 14% of other fuel oils, which alone affect the efficiency of all economic sectors that rely on energy**. In addition, 63% of U.S. imports arrive to the U.S. by water**, including 62% of this nation's crude petroleum imports, approximately 76% of U.S. exports (by tonnage), accounting for approximately **42% of total exports by value, are transported by water for foreign markets.**

Since 2012, shifts in economic conditions have influenced the characteristics of unmet port and associated transportation system needs and the capacity required to address them. Changes in the U.S. and global economies are affecting demand for transportation, including port demand. Shifting economic conditions include the consequences of the recent sharp drop in world crude oil prices and declines in other commodity prices, declines in global equity markets, revised outlooks for developing country trade partner economic growth.

The past four years have witnessed shifts in trade-related industries, the strength of commodity- producing areas within the U.S. and shifts in use of corridors connecting to internal and external markets of customers and suppliers. The nation's port infrastructure is now challenged by a significant but short provision in the 2015 surface transportation funding authorization bill from Congress, the FAST Act. This is the removal on the general prohibition on exporting U.S. crude oil. The transportation need of the nation for both crude oil and refined petroleum products had been affected by the ban which extended back to the 1970s. The freeing of crude oil exports will place new demands on U.S. seaports for facilities and operations to receive, store and load crude oil onto oil tankers. In contrast, now that crude oil is not 'shut in' to the U.S. it no longer must be refined in the U.S. which means some of the new crude oil exporting may substitute for previous demand for handling of refined petroleum product exports.

Except for the federal navigation channels, transportation infrastructure for handling crude oil and petroleum product exports are typically privately funded. They do require permitting and planning by public agencies. As initial crude oil export shipments have already begun, the need is immediate.

The strengthening of the U.S. dollar exchange rate versus foreign currencies in recent years is also affecting transportation system demand. The increased value of the dollar versus major trade partner country currencies has reduced U.S. export price competitiveness, resulting in reduced export demand and it has increased the price competitiveness of U.S. imports beyond what was anticipated in the macroeconomic forecast inputs used for the original study. Trade volumes have been affected by these changes including contributing to an uptick in offshoring and outsourcing of domestic production while the "on shoring" trend has slowed. The ports are directly affected as increases in trade volume challenge the existing capacity as well as expansion plans.

The **investment gap analysis** for the ports and waterways section of the ASCE has been updated to reflect new sources of funding for the periods 2016–2025 and 2016–2040. Three new sources were considered:

- The U.S. Army Corps of Engineers (USACE) has updated the President's Budgets for Navigation through FY17
- The Harbor Maintenance Trust Fund as designated under the Water Resources Reform Development Act of 2014 (WRRDA 2014) and
- FASTLANE Grants as scheduled under the Fast Act of 2015. USACE has revised their estimated needs for both deep draft and inland waterways navigational dredging (construction) and operations and maintenance. These changes are attributable to the need for deep draft navigational channels necessary to support new classes of container vessels that will call on U.S. East and Gulf Coast ports through both the Panama and Suez Canals and even larger vessels that are currently calling on U.S. West Coast ports.

The Water Resources Reform and Development Act (WRRDA) provides a schedule of proposed allocation of HMTF receipts for the period from FY2015 through FY2025. By 2025, 100% of all HMTF revenues collected each year are to be allocated to port and waterways projects. FASTLANE Grants are scheduled to last for the 5-year authorization period of the Fast Act. They range from $800 million in FY2016 to $1 billion in FY2020. These are funds designated for freight projects throughout the U.S. that are nationally significant.

These freight related projects are designed as competitive grants, similar in structure to the TIGER grant program that has been in place for about 10 years. Ports and related projects have typically received between 20% to 25% of the TIGER grants awarded in the past. The revised gap analysis assumes that this share of port-oriented grants will be awarded in the future. It should be noted that substantial funding gaps continue to exist, even with the levels of funding anticipated under the FAST Act though 2020 and the WRRDA reforms though 2025. Under current authorized funding levels, over $11 billion in unmet needs (36% of the total as of 2012) will continue to exist. Even with an extension of the surface transportation funding through 2025 with levels of funding and grants similar to the FAST Act, the current 36% gap between needs and funding levels will only be cut in half.

The **projected investment gap will potentially lead to 440,000 fewer jobs in 2025 and almost 1.2 million fewer jobs in 2040 than would otherwise be expected with modernized waterborne transportation systems in place.** By 2025, the nation will have lost almost $800 billion in GDP, while the cumulative impact through 2040 is expected to be almost $2.8 trillion of GDP. These impacts include ground congestion at ports, so it slightly overlaps with the effects of surface transportation.

The Failure to Act studies have found that the **fundamental impacts of under investing in infrastructure will be higher costs to businesses and households as a consequence of less efficient and more costly infrastructure services**. For example, travel times will lengthen with inefficient roadways and congested airports and airspace and out-of-pocket expenditures to households and business costs will rise if the electricity grid or water delivery systems fail to keep up with demand. Goods will be more expensive to produce and more expensive to transport to retail shelves for households or to business customers.

Business related travel, as well as commuting and personal travel, will also become more expensive and less reliable. As a consequence, **U.S. businesses will be more inefficient. As costs rise, business productivity falls, causing GDP to drop, cutting employment and ultimately reducing personal income.** Higher costs will also render U.S. goods and services less competitive internationally, Reducing exports and decreasing dollars earned and brought into the U.S. from sales to international customers. Impacts will be spread throughout the economy, but will fall disproportionately on technology and knowledge-based industries that drive innovation and economic development.

A historic competitive advantage of U.S. industry has been relatively inexpensive transportation costs both internally and for international shipments. **If airport and water port infrastructure is poorly maintained or allowed to become outdated, the affects will lead to increased cost of goods moved to domestic and International destinations** because of increased time it takes to move goods along inland waterways and to load and unload cargo at airports and marine ports, as well as inland ports and the cost of long distance business travel. There is an overlap with surface transportation in the sense that landside congestion at the ports delays cargo shipment, as well as passenger travel at airports. Unlike inadequate surface transportation, water and electricity infrastructure, which affect international competiveness indirectly by adding costs to goods, deficient airports and marine ports could not only raise costs but are very visible demonstrations that erode our national competitiveness. Overall, higher costs of exports will further erode the U.S. trade position and higher costs of imports will increase costs of materials for businesses, thereby, increasing production costs and lowering domestic sales.

While specific outcomes vary for the three types of ports (inland-water, marine and air) that are profiled, a deficient gateway network will negatively affect the nation's ability to export essential commodities and high-value manufactured goods and services (using airports) at competitive costs and will jeopardize the low cost of imports and the advantages that these imports bring for low-cost production by U.S. businesses and low cost of goods by U.S. consumers.

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Link to full ASCE report