

## IL Section - American Society of Civil Engineers

### 2010 Report Card for Illinois' Infrastructure

#### Points and Solutions

#### QUICK POINTS

- Our states infrastructure is in crisis, which is endangering Illinois' future prosperity.
- A failing infrastructure cannot support a healthy economy.
- Time is working against our state's infrastructure.
- Our children go to schools built by FDR and we drive on highways built by Eisenhower.
- We must invest now or pay much more later.
- It's estimated that each dollar spent on routine maintenance and repairs prevents \$16 of major replacement costs later.
- Investing in our infrastructure will create jobs and stimulate the economy, and the investment would be lasting.
- We need to establish a comprehensive, long-term infrastructure plan, as opposed to our current "patch and pray" method.

#### MAIN MESSAGES

- Infrastructure has a direct impact on our personal and economic health, and the infrastructure crisis is endangering our state's future prosperity. For the safety and security of our families, we can no longer afford to ignore the congested roads, contaminated drinking water and unsafe bridges we face every day.
- No matter where you live in this state, failing infrastructure is impacting your life.
- In many areas, the roads, drinking water systems and dams are simply too old.
- Like everything, infrastructure has a lifespan. Good maintenance can extend that lifespan, but not forever; and bad maintenance can shorten it.
- In some parts of the state, population growth is so extreme that the infrastructure can't keep pace with the increasing demand for things like clean drinking water and transportation.
- In other places, not only do you have to deal with aging systems and overburdened infrastructure, but there's also the impact of natural disasters like earthquakes and hurricanes.
- Time is working against our country's infrastructure and capital is a scarce resource. However, if we do not invest now, we will end up paying more in the long run.
- For every dollar spent on routine maintenance and repairs, up to \$16 dollars can be saved on the cost of major reconstruction or rehabilitation (according to Caltrans).
- When there is a catastrophic failure that results in lost lives and property, the public understands and values the need for a strong and properly maintained infrastructure. Yet, our daily lives are also greatly affected by the state of our failing infrastructure.

- Recent studies have shown that our daily commute has increased nearly 200 percent.
- The result: parents spending more time commuting to their job and less time with their children.
- Investing in our infrastructure will create jobs and stimulate the economy, and the investment would be lasting.
- Every billion dollars invested in highway infrastructure supports 35,000 jobs.
- We need to establish a comprehensive, long-term infrastructure plan, as opposed to our current “patch and pray” method.
- Federal funding alone won’t fix our failing infrastructure. The public needs to understand that when they vote down a half-cent tax increase that would be set aside for transportation improvements, they are effectively sentencing themselves to car repair bills caused by potholes and more time stuck in rush hour traffic. State and local governments must also be part of the solutions.
- Funding is important, but the solution involves more than money. It takes sound technology, wise community planning, and involved citizens willing to partner with the government and private sector to make real changes.
- America must change its transportation behavior. For instance, cities and communities should better plan to reduce dependence on personal vehicles for errands and work commutes, and businesses should encourage more flexible schedules and telecommuting.
- Solutions to ease the increasing demands on our infrastructure systems and improve conditions, capacity and safety are multifaceted. It does not always mean building more roads, landfills or airports.
- We have seen the price tags rise in recent years for infrastructure systems like roads and bridges, and as such, we need to start taking a serious look at ways to reduce overall costs. Innovative building and construction methods and materials are key to the future health of our nation’s infrastructure. Investing in research and development now will help facilitate our ability to come up with more cost effective solutions in the future.

## QUESTIONS

### **Isn't this just a question of funding for civil engineers? Don't you find that issuing this progress report is self-serving?**

When a doctor diagnoses a patient with cancer, he isn't accused of being self-serving or promoting 'work'. In the same way, civil engineers—the professionals who design and build infrastructure systems—are the ones most qualified to evaluate their improvement or decline. We feel it is our professional responsibility to call attention to our ailing infrastructure and offer solutions.

### **Are our roads, bridges, etc. unsafe? Are our bridges going to start falling down?**

The United States still boasts some of the best infrastructure in world. However, years of inattention have left us at a critical phase where many of our infrastructure systems are no longer able to consistently provide the level of service our population demands. When there is a catastrophic failure with a dam that results in lost lives and property, the public understands and values the need for a strong and properly maintained infrastructure. Yet, our daily lives are also greatly affected by the state of our failing infrastructure.

### **What's going to happen to our state's infrastructure if the funding ASCE suggests isn't invested?**

The longer we delay investment, the higher the cost will rise. If there is a leak in the roof of your house and you wait too long to repair it, eventually you will have to replace the entire roof. Also, the longer we wait the less likely it is that our infrastructure systems can continue to meet our needs. That will mean longer commutes and more delayed flights and combined sewer overflows.

### **Do you consider this issue more important than other domestic issues such as the social security or the health care crisis?**

Infrastructure has a **direct impact** on our personal and economic health. As with social security and health care, our failing infrastructure is a trillion dollar crisis that also deserve national attention to address this important issue.

Many economists have noted that unlike federal entitlement programs, infrastructure is a capital investment that returns dividends in the form of a more robust economy and a higher standard of living.

### **Why is the state of the infrastructure an important issue (why should we care)?**

Most of us know from personal experience that our roads are congested and our schools are overcrowded—this *Report Card* provides a framework to understand the full scope of those problems.

The state of our infrastructure has a direct impact on the quality of our lives and a strong infrastructure helps to support a strong economy.

### **What is the 2010 Report Card?**

The 2010 *Report Card for Illinois' Infrastructure* offers our assessment of the state of the State's infrastructure. The *Report Card* assigns grades, based on the most up-to-date information available, to 9 areas of critical infrastructure, including roads, bridges, and drinking water. .

### **What's the overall grade?**

The 2010 *Report Card for Illinois' Infrastructure* overall grade is a D+. Grades in the Illinois *Report Card* ranged from a high of C+ for both aviation and bridges to a low of D- for navigable waterways.

### **How was the Report Card compiled?**

An advisory council of 33 civil engineers evaluated existing data reports for each infrastructure category. The progress and trends were determined by evaluating the infrastructure's condition, performance, capacity, funding and resiliency.

### **What are the biggest infrastructure concerns?**

Some of the areas of greatest concern nationally are transportation, clean water, and levees.

### **What has caused the problems with our infrastructure?**

There are many factors—explosive population growth; political opposition to development of effective solutions; and federal, state and local funding issues—but, most importantly, it is the age of the infrastructure.

### **Why haven't things improved?**

Time is working against our country's infrastructure. We have under-invested for decades, and we're getting hit with the hard reality that ignoring a problem doesn't make it go away. There has been a marked lack of leadership on this critical issue despite its importance to the daily lives of the American people.

### **What is the solution to our infrastructure problems?**

Funding is important, but the solution involves more than money. It takes sound technology, wise community planning, and involved citizens willing to partner with the government and private sector to make real changes. We need to establish a comprehensive, long-term infrastructure plan, as opposed to our current "patch and pray" method.

### **How should local communities choose which projects to build with the infrastructure stimulus funds? What projects should receive priority?**

In order to guide the process of allocating funds to these important projects, ASCE has compiled guiding principles which will help steer investment in the right direction by keeping the focus on rehabilitating worn-out infrastructure to increase safety and building new infrastructure to keep the nation competitive in the global economy.

ASCE believes that all projects supported by an economic stimulus investment must meet the following fundamental criteria:

- ✓ Projects must create and sustain employment increases;
- ✓ Investments must provide long-term benefits to the public (such as congestion relief);
- ✓ Long-term maintenance and upkeep needs of all infrastructure projects – existing and new – must be taken into account; and To ensure accountability and transparency an auditing program must be established to review the program and measure desired outcomes.
- ✓ As the investments are made, proper attention must be paid to the prioritization and selection of these projects to ensure that the criteria are met. The following principles should guide selection decisions:
  - The project should deliver measurable improvements in public health, safety and quality of life;
  - The project should provide substantial, broad-based economic benefit;
  - The project should be designed and built in a sustainable and cost-effective manner, and proper consideration must be given to life-cycle costs; and The project should have a significant environmental benefit such as area restoration, improved air quality through reduced congestion and better watershed management through eliminating vulnerabilities in a system.

## INDIVIDUAL CATEGORIES

### Aviation

- ✓ Travelers are faced with increasing delays and inadequate conditions as a result of the long overdue need to modernize the outdated air traffic control system and the failure to enact a federal aviation program.
- ✓ Forecasts for 2008 to 2025, large hub and medium airports are expected to grow 43 – 35% in terms of enplanements for the next 18 years.
- ✓ The Airport Improvement Program, which is a federal grant program used to fund airport improvements, is not increasing at the pace necessary to keep up with the aging airport infrastructure.
- ✓ IDOT estimates that the state's airports have a total of approximately 9.6 million square yards of pavement, of which only 7.5 million square yards have been catalogued, and approximately 10% of the pavements rate poorly and are at a stage of complete replacement being the only cost effective measure.
- ✓ Without clear and prompt attention from the state government, airport pavement surface conditions will quickly deteriorate, exponentially increasing maintenance and rehabilitation costs.
- ✓ The state should lead the preparation of a statewide system plan, addressing short- and long-term needs, as well as make recommendations to better balance the state's aviation infrastructure.

### Bridges

- ✓ 17 percent, of the state's bridges are classified as structurally deficient or functionally obsolete.
- ✓ Illinois has the 3<sup>rd</sup> largest bridge inventory in the nation, with 25,998 bridges.

### Dams

- ✓ Illinois has 445 dams (32%) that are more than 50 years old.
- ✓ 74% of the dams have not been reviewed or issues a dam safety permit by the state.
- ✓ 60 % of the state's dams were built for recreation purposes, 14% for water supply, 12% for flood control 7% to contain mine tailings, and another 7% for other uses.
- ✓ 95% of the state's dams are earth dams.
- ✓ 72% of the state's dams are privately owned.
- ✓ There are 1,395 dams that fall under the state's jurisdiction based upon the last inventory performed in 2007.
- ✓ IDNR's lack on an adequate dam safety enforcement program, however, has eroded the ability of the state's dam safety engineers to bring dams into compliance with proper safety criteria.
- ✓ There are 329 unpermitted dams in Illinois that are more than 50 years old.
- ✓ The Association of State Dam Safety Officials estimated that in its 2002 report that \$325 million is needed to rehabilitate dams in Illinois alone.

### Drinking Water

- ✓ Illinois's drinking water systems face a required investment of \$21.5 billion over the next 20 years to replace aging facilities and comply with safe drinking regulations.
- ✓ 41% of the state's population is served directly by surface water systems, 58% from groundwater, however users of those systems only account for 23% of the water consumption.
- ✓ The Illinois Department of Public Health oversees 4,132 non-community public water systems, which serve more than 505,000 people.
- ✓ Of Illinois's 1,787 community water systems, 418 systems were cited for a total of 1,560 violations.

## **Navigable Waterways**

- ✓ A typical 15-barge tow can move the same amount of cargo as 216 rail cars or 1,050 semi-trucks.
- ✓ Barges can move one ton of cargo 576 miles on one gallon, rail cars 413 miles, and semi-trucks 155 miles.
- ✓ Most of the locks and dams along the Illinois, Mississippi, and Ohio rivers were built in the 1930's with a 50-year design life.
- ✓ The systems 600-foot locks do not accommodate today's modern 1,200-foot tows without having to split the load and pass through the lock in two tows.
- ✓ Economic activity on the upper Mississippi and Illinois rivers supports 400,000 jobs.
- ✓ Over the last 30 years, the U.S. population has increase more than 40% while the GDP has tripled from \$2.5 to \$7.5 trillion. Meanwhile, capital investment in public water resources infrastructure has decreased by 70%.
- ✓ Timely maintenance is being deferred and there is an estimated \$500 million operations and maintenance backlog on the navigable waterways of Illinois.

## **Rail**

- ✓ A freight train is three times as fuel efficient as a truck, and traveling by passenger rail uses 20 percent less energy per mile than traveling by car.
- ✓ Freight traffic is expected to double in the next 20 years.
- ✓ Congestion onf the state's rail system costs millions of dollars in shipping delays, and causes substantial noise and air pollution as trains idle for hours waiting for track clearance.
- ✓ In 2005 over 500 million tons of freight passed through the state of Illinois.
- ✓ The state's rail infrastructure needs are estimated to be \$2.80 billion for improvements and expansion.
- ✓ Approximately \$560 million is spent annually to repair and maintain tracks and bridges used by all railroad classes.
- ✓ Freight currently takes 48 hours to move by rail from the west coast to the Chicago area, and can take at least that long to pass through the Chicago rail network.
- ✓ Illinois has the second largest rail system in the U.S. with 9,668 route miles of track and 39 freight rail companies.

## **Roads**

- ✓ Severe traffic congestion costs the state's economy tens of billions of dollars in lost productivity each year.
- ✓ 16% of the state's roads are in poor to mediocre condition and cost the state \$2.2 billion annually.
- ✓ Illinois ranks among the top five states in terms of longest commuting times in the country.
- ✓ Vehicle operating costs for the Chicago area is \$332 per year.
- ✓ The average cost of congestion per commuter in the Chicago are is \$921.

## **Transit**

- ✓ The current 5-year capital needs in northeastern Illinois is over \$10 billion, and the recent Illinois Capital Bill provides only \$2.7 billion.
- ✓ The state has not provided capital funding since 2004, leading to deferred maintenance resulting in slower operating conditions and frequent breakdowns.
- ✓ Maintenance needs account for \$7.3 billion, enhancement needs account for \$1.1 billion and expansion needs account for \$2 billion.

## **Wastewater**

- ✓ Aging systems discharge billions of gallons of untreated wastewater into Illinois surface waters
- ✓ each year.
- ✓ Illinois must invest \$13.4 billion over the next 20 years to update or replace existing systems and build new ones to meet increasing demand.
- ✓ \$1.27 billion for secondary and advanced treatment, \$1.66 billion for sewer replacement and rehabilitation, \$373 million for new collection systems and interceptors, and \$10.1 billion to address combined sewer overflows.
- ✓ Many other infrastructure systems enjoy sustainable, long-term sources of federal backing, often through the use of dedicated trust funds. Under the current policy water and wastewater infrastructure do not.

## SOLUTIONS

ASCE has identified five key solutions for addressing the nation's infrastructure crisis.

1. Increase Federal Leadership in Infrastructure
  - America's infrastructure needs bold leadership and a compelling national level vision.
  - During the 20th Century, the federal government led the way in building our nation's greatest infrastructure systems from the New Deal programs to rural electrification, the Interstate Highway System and the Clean Water Act. Since that time, federal leadership has decreased, and the condition of the nation's infrastructure suffered.
  - That strong national vision must originate with strong federal leadership and be shared by all levels of government and the private sector.
2. Promote Sustainability and Resilience
  - America's infrastructure must meet the ongoing needs for natural resources, industrial products, energy, food, transportation, shelter and effective waste management, and at the same time protect and improve environmental quality.
  - Sustainability and resiliency must be an integral part of improving the nation's infrastructure.
  - Infrastructure systems must be designed to protect the natural environment and withstand both natural and man-made hazards, using sustainable practices, to ensure that future generations can use and enjoy what we build today, as we have benefitted from past generations.
3. Develop Federal and Regional Infrastructure Plans
  - Infrastructure investment at all levels must be prioritized and executed according to well conceived plans that both complement the national vision and focus on system wide outputs.
  - The plans must reflect a better defined set of federal, state, local, and private sector roles and responsibilities and instill better discipline for setting priorities and focusing funding to solve the most pressing problems.
  - The plans should complement our broad national goals of economic growth and leadership, resource conservation, energy independence, and environmental stewardship.
4. Address Life Cycle Costs and Ongoing Maintenance
  - Life cycle cost analysis, ongoing maintenance, and planned renewal will result in more sustainable and resilient infrastructure systems and ensure they can meet the needs of future users.
  - As infrastructure is built or rehabilitated, life cycle cost analysis should be performed for all infrastructure systems to account for initial construction, operation, maintenance, environmental, safety and other costs reasonably anticipated during the life of the project, such as recovery after disruption from natural or manmade hazards.
  - Owners of the infrastructure should be required to perform ongoing evaluations and maintenance to keep the system functioning at a safe and satisfactory level.
5. Increase and Improve Infrastructure Investment from All Stakeholders
  - All levels of government, owners, and users must renew their commitment to infrastructure investments in all categories.
  - We must develop and authorize innovative financing programs that not only make resources readily available, but also encourage the most effective and efficient use of those resources.
  - Federal investment must be used to complement, encourage and leverage investment from the state and local government levels as well as from the private sector.
  - Users of the infrastructure must be willing to pay the appropriate price for their use.

## STIMULUS INFRASTRUCTURE INVESTMENT

The nation's infrastructure has not seen this level of leadership and support in decades.

- ❖ We haven't seen this kind of commitment since Roosevelt, Eisenhower or Kennedy.
  - The stimulus is about creating jobs, but that doesn't mean it can't also be about better preparing for our future.
- ❖ If we don't begin to plan long-term, we will find ourselves in this same place 20 years from now.
  - This type of investment shouldn't just happen when the economy is in crisis.
- ❖ An unhealthy infrastructure cannot support a healthy economy.
  - The stimulus is a 'down payment' on the problem.
  - The stimulus is about 'shovel ready' projects.
- ❖ ASCE believes that all projects supported by an economic stimulus investment must meet the following fundamental criteria:
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  - To ensure accountability and transparency an auditing program must be established to review the program and measure desired outcomes.
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  - The project should have a significant environmental benefit such as area restoration, improved air quality through reduced congestion and better watershed management through eliminating vulnerabilities in a system.
- ❖ Where do we go from here [the stimulus] answers:
  - Infrastructure Bank Act could be a "next step". New and innovative way to fund infrastructure that could build on the improvements brought on by the stimulus.
  - As we saw with the replacement of the I-35W bridge and the replacement of the highway overpass in Oakland after the tanker truck fire, when they are essential, projects can be fast tracked. This may be an opportunity to find ways to fast track the most essential projects in the stimulus package.
  - There must be assurances and checks in place to make sure the stimulus money goes to actual infrastructure projects, not just to supplement state budgets.
  - We cannot afford to violate the public's trust.
- ❖ Not only would this kind of investment create jobs, if done right it would also provide tangible benefits to the American people, such as reduced traffic congestion, improved air quality, clean and abundant water supplies and protection against national hazards.

- ❖ The stimulus investments can provide significant and lasting benefits for the public, but only if projects are selected wisely and on a basis that retains jobs, not just creates them.
- ❖ While the stimulus is an important down payment on the future viability and safety of America, the plan isn't a cure-all for the infrastructure crisis and must not be treated as such.
- ❖ It is only one piece of the complex puzzle that must include continued focus on the infrastructure crisis long after any stimulus package is invested.