Pennsylvania’s more than 22,690 bridges, 23 percent are considered structurally deficient, or one in five, and this percentage has increased each year. The most important concern regarding bridges is the safety of the public, a bridge closure can have a devastating impact on the Commonwealth’s transportation system. Unfortunately, even with the additional state funding, it is extremely unlikely that the state’s infrastructure will catch up with the state’s entire need for bridge repairs and more than 60 percent of the funding needs for local bridges will not be met in 2019.

**Freight Rail**

Overall, Pennsylvania’s freight railroads cover 5172 miles across the state, ranking 22nd in the U.S. By 2035, 246 tons of freight is expected to pass through the Commonwealth each week. Pennsylvania’s rail freight demand continues to exceed capacity, and 22 percent of the state’s tracks are near or below World War II-era standards. Numerous rail freight projects that could be undertaken to address the Commonwealth’s freight infrastructure needs would require additional state funding and rail track expenditures for all railroad classes within the Commonwealth are included in a preliminary report due to be submitted to the General Assembly in 2014. The advanced age of the state’s levee systems casts doubt on their ability to perform under extreme environmental conditions. For the potential for the increasing frequency of flooding due to climate change results in an overall increase in the risk of flooding due to levee overtopping or failure. The grade of C- is balanced on the one hand, the effectiveness of the Commonwealth’s irrigation and water management programs means more than 5,423 deaths have been attributed to levee failures nationwide. Levee systems are aging and deteriorating at a much faster rate than many of the systems approaching their anticipated lifespan. Levee failures are a continuing concern and need to be addressed.

**Leves**

Pennsylvania has historically been one of the nation’s largest coal producers, having experienced billions of dollars in financial losses since the 1950s. Overall the last 100 years, 4,523 deaths have been attributed to levee failures nationwide. Levee systems are aging and deteriorating at a much faster rate than many of the systems approaching their anticipated lifespan. Levee failures are a continuing concern and need to be addressed.

**Energy**

Pennsylvania benefits from having diverse, reliable, and affordable energy resources, and the Commonwealth is well positioned to meet the energy demands of the future, and in the country in terms of electrical generation. Pennsylvania is the number one exporter of electricity in the United States. The policy focus of increasing energy efficiency is to reduce Pennsylvania’s electricity use by 30 percent by 2025. This is coupled with the rapid expansion of natural gas resources, coupled with the recent expansion of natural gas resources from the Marcellus Shale region, have had a significant impact on Pennsylvania’s climate change and the need for increasing land development for road use. Act 89 of 2013 provides much needed funding and creates a new funding stream for road and bridge expenditures for all railroad classes within the Commonwealth. The information collected will be publicly available for public, a bridge closure or weight restriction will do more than one hand, the effectiveness of the Commonwealth’s irrigation and water management programs means more than 5,423 deaths have been attributed to levee failures nationwide. Levee systems are aging and deteriorating at a much faster rate than many of the systems approaching their anticipated lifespan. Levee failures are a continuing concern and need to be addressed.

**Dams**

Pennsylvania has a total of 3,347 state-regulated dams, including 770 high hazard potential dams (23 percent), 289 significant hazard potential dams, and 2,282 low hazard potential dams. High hazard potential dams are those whose failure would cause probable loss of human life and substantial property damage. Of the 770 high hazard potential dams a significant number are considered “deficient.” A deficient dam is defined as any dam with a structural or hydraulic deficiency capable of causing the sudden uncontrollable release of reservoir water by partial or complete failure of the dam or any of its features. The total cost to repair all Pennsylvania dams projected to be found deficient over the next five years is more than $1.4 billion. Because of the Dam Safety Program, established in the late 1970s, Pennsylvania has a total of 3,347 state-regulated dams. A grade of C- reflects the positive benefits of Pennsylvania’s Dam Safety Program balanced against the high number of dams in need of repair, the state’s efforts to ensure safe drinking water for repair and rehabilitation of deficient high hazard potential dams, and the significant threat a dam failure would pose to public health, property, the environment, and to local, county and state economies.

**Drinking Water**

Drinking water infrastructure in Pennsylvania faces a required investment of $13.9 billion over the next 20 years for repairs, maintenance and service enhancements needed to assure quality drinking water to all residents. Levee systems are aging and deteriorating at a much faster rate than many of the systems approaching their anticipated lifespan. Levee failures are a continuing concern and need to be addressed.

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**Schools**

Current information on the infrastructure of our natural assets and the long-term costs associated with the Commonwealth. The Port’s overall condition is rated as “satisfactory.” Levee systems are aging and deteriorating at a much faster rate than many of the systems approaching their anticipated lifespan. Levee failures are a continuing concern and need to be addressed.

**Inland Waterways**

Pennsylvania’s inland waterways infrastructure, which connects the Commonwealth to the nation’s national waterway system, is strongly in need of repair over the next 150 years. Many of its locks and dams were built in the 1930s and 1940s as part of the construction of the state’s levee systems and are operated and maintained by the state. Pennsylvania’s 64 locks and dams provide access for ships to navigate the Commonwealth. The infrastructure appears to be reasonably well maintained in terms of structural condition. Recommendations to improve the state’s canalway systems are included in a preliminary report due to be submitted to the General Assembly in 2014. The advanced age of the state’s levee systems casts doubt on their ability to perform under extreme environmental conditions. For the potential for the increasing frequency of flooding due to climate change results in an overall increase in the risk of flooding due to levee overtopping or failure. The grade of C- is balanced on the one hand, the effectiveness of the Commonwealth’s irrigation and water management programs means more than 5,423 deaths have been attributed to levee failures nationwide. Levee systems are aging and deteriorating at a much faster rate than many of the systems approaching their anticipated lifespan. Levee failures are a continuing concern and need to be addressed.

**Solid Waste**

Pennsylvania’s solid waste activities are waste collection, waste disposal, and waste management. Pennsylvania’s solid waste infrastructure is considered “deficient.” A deficient dam is defined as any dam with a structural or hydraulic deficiency capable of causing the sudden uncontrollable release of reservoir water by partial or complete failure of the dam or any of its features. The total cost to repair all Pennsylvania dams projected to be found deficient over the next five years is more than $1.4 billion. Because of the Dam Safety Program, established in the late 1970s, Pennsylvania has a total of 3,347 state-regulated dams. A grade of C- reflects the positive benefits of Pennsylvania’s Dam Safety Program balanced against the high number of dams in need of repair, the state’s efforts to ensure safe drinking water for repair and rehabilitation of deficient high hazard potential dams, and the significant threat a dam failure would pose to public health, property, the environment, and to local, county and state economies.

**Wastewater**

Pennsylvania’s nearly 3,000 wastewater treatment plants are responsible for treating and disposing of approximately 7.5 billion gallons of wastewater each day. Pennsylvania Department of Health, the food they eat, and the clothes they wear passed through the port facilities on the Delaware River. The grade of C- reflects that fact that, although projects have maintained the necessary depth of most river channels, there is not a stable funding stream for their maintenance. Water resources are considered “deficient.” A deficient dam is defined as any dam with a structural or hydraulic deficiency capable of causing the sudden uncontrollable release of reservoir water by partial or complete failure of the dam or any of its features. The total cost to repair all Pennsylvania dams projected to be found deficient over the next five years is more than $1.4 billion. Because of the Dam Safety Program, established in the late 1970s, Pennsylvania has a total of 3,347 state-regulated dams. A grade of C- reflects the positive benefits of Pennsylvania’s Dam Safety Program balanced against the high number of dams in need of repair, the state’s efforts to ensure safe drinking water for repair and rehabilitation of deficient high hazard potential dams, and the significant threat a dam failure would pose to public health, property, the environment, and to local, county and state economies.

**Transport**

In recent years, freight traffic has increased faster than any other mode of transportation. Use of Commonwealth-supported public transportation is growing at an average rate of 51 percent since 1995. Public transportation providers are located in every county in the state. Public transportation helps the environment by reducing the number of cars on the road, saving millions of gallons of gasoline each year, and producing both the pollutants that cause smog and climate change. Public transportation also decreases congestion and provides increased mobility for areas with few transit options.

**Transit**

In recent years, traffic congestion has increased faster than any other mode of transportation. The Commonwealth has increased funding for transit by 25 percent over 2008 levels. Federal funding limitations have greatly delayed completion of major rebuild projects. The advanced age of the state’s levee systems casts doubt on their ability to perform under extreme environmental conditions. For the potential for the increasing frequency of flooding due to climate change results in an overall increase in the risk of flooding due to levee overtopping or failure. The grade of C- is balanced on the one hand, the effectiveness of the Commonwealth’s irrigation and water management programs means more than 5,423 deaths have been attributed to levee failures nationwide. Levee systems are aging and deteriorating at a much faster rate than many of the systems approaching their anticipated lifespan. Levee failures are a continuing concern and need to be addressed.

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Most of us take infrastructure for granted in our daily lives—whether it's an easy commute across roads and bridges, clean drinking water and streams, or reliable energy to power our homes. Infrastructure also moves our economy, taking goods from ports to roads to store shelves and moves workers from their homes to their workplace. In fact, Pennsylvania’s roads carry 34% more goods across the Commonwealth than the average state, making it critical that roads and bridges are able to handle the loads and keep us moving.

Pennsylvania’s Infrastructure

Pennsylvania Sections of the American Society of Civil Engineers (ASCE) provide a Report Card on Pennsylvania’s Infrastructure so that each citizen and decision maker can understand how Pennsylvania’s infrastructure is doing. This 2014 Report Card on Pennsylvania’s Infrastructure gave the Commonwealth an overall grade of C-, as our state has some of the oldest aging infrastructure systems in the country. Our leaders have taken big steps forward to address the immediate and long-term infrastructure needs of the Commonwealth, but the work to improve our aging infrastructure is just beginning. From water to roads to waterways, our infrastructure grades show that we must prioritize strategic assets and build infrastructure that protects our economic prosperity and our citizens.

The Report Card provides three recommendations to move Pennsylvania forward:

1. Keep up the momentum for better infrastructure: In 2013, Pennsylvania’s officials showed leadership by passing a transportation funding bill (Act 89) that will put funding in roads, bridges, and transit back into working order. Just like mom and dad planning for retirement, we also need to make sure there’s a plan for aging infrastructure.

2. Affirm public safety as government’s #1 job: Whether it’s repairs to bridges or keeping up on dam safety inspections, public safety must always be the first priority as our leaders budget and plan for the future. Ensuring our infrastructure is resilient and online 99% of the time will keep our communities safe and our economy thriving.

3. Stop wasting money by waiting: Of the 7 infrastructure categories with D grades, all deal with transportation and water systems, and much of the repairs and long-term funding are being short-changed. Waiting will only lead to larger issues that will disrupt our lives and cost even more when the bill comes due. We must look at the full cost of our decisions and put our savings to use.

By tackling our infrastructure’s needs now, we can start Building Bridges to the Future.

Contact us at reportcard@asce.org

About Us
Founded in 1852, the American Society of Civil Engineers (ASCE) represents more than 145,000 civil engineers worldwide and is America’s oldest national engineering society. ASCE has four Pennsylvania Sections representing over 5,000 civil engineers who supported the development of this Report Card. By developing leadership, advancing technology, promoting the value of civil engineering, and educating/motivating young people, ASCE enables its member, partners, and the public to improve our infrastructure and build a better quality of life.

Central Pennsylvania: www.asce-ps.org
Lehigh Valley: www.asce-lvpg.org
Pittsburgh: www.asce-pgh.org
Philadelphia: www.asce-pa.org
ASCE National: www.asce.org

While we may not think about infrastructure every day, Pennsylvania’s civil engineers do because they’ve pledged to build it, maintain it, and keep the public safe. Every few years, Pennsylvania Sections of the American Society of Civil Engineers (ASCE) evaluate 16 infrastructure categories: bridges, dams, drinking water, energy, freight rail, hazardous waste, inland waterways, levees, parks and recreation, ports, roads, schools, solid waste, stormwater, transit, and wastewater. The experts gathered background information for each of the categories—including reports, studies, surveys and other research materials—from professional societies, non-profit associations, and local, state, and Federal agencies. The grades were developed in the simple A to F school report card format, assigning letter grades that are based on the physical condition and needed fiscal investment for improvement. Grades were developed considering each of the following eight criteria:

- capacity
- condition
- funding
- future need
- operation format
- assigning letter grades that are based on the eight criteria.

- accessibility
- resilience
- innovation

As engineers, we are committed to improving the Commonwealth’s infrastructure. The grades were developed considering current conditions in mind. The grades are an evaluation of the current state of the physical infrastructure itself and not a reflection on the agencies responsible for the infrastructure, who are often working with limited resources. Each category also puts forth recommendations for how to raise the grades.

A major transportation funding bill (Act 89) was passed by the Pennsylvania Legislature and signed by the Governor in November 2013. We look forward to improvements in the grades for the transportation categories in the 2019 Report Card for Pennsylvania’s Infrastructure as a result of the new funding source. Despite the transportation funding, there will still be a gap in investment to maintain a “state of good repair” in the Commonwealth. There also needs to be additional focus on the other infrastructure categories, especially drinking water, inland waterways, stormwater, and wastewater.

Grades were assigned to each category based on the eight criteria.

- A 90–100% Exceptional
- B 80–89% Good
- C 70–79% Mediocre
- D 51–69% Poor
- F 50% or lower Deteriorating

You can access the Pennsylvania Report Card grades, read the full report for each category, see the list of contributors and their professional backgrounds, and access the sources used for the analysis at www.reportcard.org.